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The Clinical Psychologist

His Role in Private Medical Practice

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• **The independent diagnosis and treatment of mental and nervous disorders according to California law constitutes practicing medicine. By this yardstick, an increasing number of clinical psychologists are entering the private practice of medicine. The medical profession has not provided through its leadership the opportunity for clinical psychologists to utilize their skills in a legitimate and supervised way in the treatment of private patients, nor has the medical profession taken sufficient interest in modern methods of treating patients with psychogenic disorders.**

If the psychiatric team is a feasible and practical approach to spreading the base of psychiatric treatment in hospitals and clinics, it should be applicable to private practice settings too. In the team setting, the psychologist can render great assistance to the physician in the diagnosis and treatment of patients with psychogenic disorders without compromising the principle that the primary responsibility for the patient is the physician's. By virtue of his training and experience, it is the psychiatrist who is best qualified to supervise the work of the psychologist; and until such time as the medical profession is better acquainted with psychotherapeutic techniques, the employment of psychologist assistants should be (according to good medical practice) left to the psychiatrist.

The need for some regulation of the use of the title "psychologist" is increasing in order to protect the public from quacks who pose as psychologists. However, any law which is directed toward elimination of the quack should specifically define psychotherapy and contain provisions for its use under adequate medical supervision.

The medical profession is obligated to take its traditional role in providing the best possible treatment for patients who are in need of it, and psychotherapy is an inherent part of treatment.

IT IS LIKELY that most physicians are unaware of the increasing degree to which clinical psychologists are entering the private practice of medicine. The clinical psychologists here referred to are not the quacks, the diploma-mill or mail order house graduates, nor the faddist (about whom we are all concerned), but the graduates of legitimate university-sponsored programs of training who have received Ph.D. degrees in clinical psychology. And the term "practice of medicine" as here used means the independent undertaking of the treatment of a patient for a fee.

There are many different kinds of psychologists being trained by colleges and universities. There are in addition to clinical psychologists, counseling psychologists, experimental psychologists, educational psychologists, industrial psychologists, physiological psychologists, psychometricians and social

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psychologists. The nature and extent of their training differs greatly, varying from a bachelor's degree with a major in psychology to four or more years of postgraduate work including experience in research and leading to a doctor of philosophy degree. As can be inferred from their titles, they engage in a wide variety of activities in varied settings.

The clinical psychologist is a relative newcomer to the field of psychology. The increase in numbers of persons entering this field since World War II has been dramatic. Dr. James G. Miller (Symposium: The Veterans Administration and Clinical Psychology; Journal of Clinical Psychology, Vol. III, No. 1, 1-56, January, 1947) suggested it might be a "professional revolution." Dr. Miller played an important role in this "revolution." As Chief of the Clinical Psychology Section of the Neuropsychiatry Division of the Veterans Administration in 1946, he proposed that the Veterans Administration undertake, with the assistance of many universities, the training of clinical psychologists. A system was devised wherein these graduate students would work approximately one-half time in VA hospitals and clinics while taking their academic work under the universities. In this way they could be paid and receive support while getting their training.

Dr. Miller was convinced that "American universities [were] not . . . equipped to give graduate training in any type of psychology at a rate which [would] begin to meet the demand." He added, "There must be a complete revolution of the scope of national planning in this field, in matters both of quantity and of quality."

"Few, if any, would disagree," said Dr. Miller, "with the statement that no university in the country has in the past had a well-rounded training program covering all necessary fields of clinical psychology." He insisted that the clinical psychologist "is no longer merely a psychometric technician for he has developed full professional stature in diagnosis, in therapy, and in research. Consequently his status *is being established* [by the Veterans Administration] comparable to that of the physician in every way compatible with law and best professional practice." (This was an administrative decision, since at that time the new training program was just one year old.)

Dr. Daniel Blain, who was Chief of the Neuropsychiatry Division of Veterans Administration, made it very clear (quoting Dr. Miller) that the psychologist would have an important *team* function in the treatment of neuropsychiatric patients. This is of historical interest and reference to it will be made later in the discussion of the role of the clinical psychologist in the practice of medicine.

At the University of California at Los Angeles, as at other universities, it has become necessary to limit enrollment of graduate students in clinical psychology. Here the students are required to have a bachelor's degree and to have completed courses in psychological interviewing and case history methods, child psychology, psychology of exceptional children and abnormal psychology. Also required for admission are undergraduate courses in anthropology or sociology, chemistry, physics, mathematics, and one year of zoology, physiology, endocrinology or genetics. As graduate students the applicants must pass comprehensive examinations in eight of the following eleven areas of psychology: general, experimental, abnormal, social, comparative, physiological, developmental, historical, industrial, clinical and measurement.

During their first year of graduate work, one semester of three of the following four courses must be taken: Advanced Psychometric Methods, Clinical Psychology (basic concepts in clinical psychology), Advanced Clinical Measurement Techniques (study of tests used in clinical diagnosis—individual and group tests of intelligence, personality, diagnosis and projective techniques), Seminar in Abnormal Psychology.

In the second year practical experience is obtained in hospitals and clinics in clinical diagnostic testing and psychotherapy, and in some instances there is specialization in the area of speech disorders. In addition, at least one semester of three of the following five courses is required: Experimental Design in Psychology, Clinical Neurology, Personality Dynamics (theory of various schools of psychiatry), Theory and Practice of Projective Methods, Seminar in Mental Measurements.

In the third year, courses in Psychotherapeutic Techniques, Research in Psychology and Advanced Rorschach Interpretation are offered.

In the fourth year further work in research together with an internship is required, (*i.e.* working as a psychologist in a clinical setting, under medical supervision, or doing special work in speech, etc.).

Each candidate for a Ph.D. degree has a doctoral committee, appointed by the graduate council of the university, that reviews his written examinations, gives him an oral examination and reviews his dissertation. Each candidate must pass examinations in the translation of two foreign languages (normally French and German).

The graduate clinical psychologist is generally a bright young man or woman with a knowledge of and an interest in emotional factors as they relate to disease that too often exceeds that of our average medical school graduate and of the average practicing physician. They have been trained in research

methodology and have a good speaking acquaintanceship with medical terminology.

An appreciable part of their training has been obtained in hospitals and clinics. The medical profession has been most cooperative in making clinical facilities available to them and in most instances has assisted in varying degrees in their instruction.

In many respects they do not differ from the bacteriologist, biochemist or physiologist who has gotten a Ph.D. degree. The well-trained bacteriologist certainly knows more about the nature and method of transmission of pathogenic microorganisms than does the average physician. The physiologist with a Ph.D. degree has a knowledge of organ function that is generally vastly superior to that of the medical school graduate or average practitioner whom they help train.

One great difference between these specialists and the clinical psychologist is that an increasing number of the latter are interested in diagnosing and treating patients—in other words, practicing medicine. This was unheard of prior to World War II except for a very few psychologists who had obtained psychoanalytic training here or abroad and who entered the private practice of psychoanalysis. They made no pretense of doing so under medical auspices. During World War II, in addition to the unprecedented task of screening large numbers of inductees for emotional imbalance, the armed services were confronted with the need to take care of tremendous numbers of psychiatric disorders. There were approximately one million patients admitted to army hospitals for neuropsychiatric disorders. Of these, approximately 387,000 were given medical discharges; 163,000 more were given administrative discharges because of personality disorders, mental deficiency, sexual deviations and addictions. In May of 1945 (V-E Day) there were 2,400 physicians classified as psychiatrists in the army. Slightly over one-half of these had had psychiatric training that in most instances did not exceed three to six months.

Owing to this critical shortage of trained psychiatrists every effort was made to make as much use as possible of the services of psychologists, social workers and other ancillary workers. It was an emergency situation. In the calendar year 1945 alone there were 58,006 psychiatric casualties evacuated from overseas theaters to the United States who needed to be cared for.

It was in 1944 and 1945 that Dr. William C. Menninger,* assisted by Dr. Morton A. Seidenfeld and with the cooperation of Dr. Walter Bingham of the Adjutant General's office, succeeded in having 130 clinical psychologists transferred to the Medical Administrative Corps and in commissioning an additional 114 enlisted men who could qualify as clinical psychologists in hospitals.

Many of the psychiatrists in the services did not know how to use psychologists, and in some instances, especially with so many psychiatrists having the title more by virtue of a psychiatric assignment than by virtue of real training or experience, the psychologists knew more about psychotherapy than the men under whom they were working.

It was in this setting that the attitude so commonplace now had its inception—*i.e.*, Why should I who know more about psychotherapy than physicians and even many psychiatrists be prevented from utilizing my skill when there is such a critical need for psychotherapists? Why should physicians be permitted by law to diagnose and treat psychiatric patients just because they have an M.D. degree, while we who know so much more are not?

The Veterans Administration, like the army, was confronted with a psychiatric emergency after the war and, like the army, made every effort to obtain and train psychologists for use in hospitals and clinics. Dr. Miller, who was a psychologist as well as a physician (but not a psychiatrist at that time), as head of the psychology program set about to establish a "status for psychologists that was comparable to that of the physician."

What has this led to? On one hand, greater numbers of well-trained clinical psychologists have become available for work in medical settings. In psychiatric hospitals and clinics they have been available for testing patients, and for assisting in treatment and in doing research. Their importance in under-staffed state and veteran hospitals cannot be overemphasized. They have excelled in certain areas such as in doing speech retraining with aphasics and in group therapy. They have earned a respected and important place in the psychiatric team along with the more traditional members—the psychiatric nurse and the psychiatric social worker. (Although not objecting to being called a member of the psychiatric team, many psychologists object by virtue of their having Ph.D.'s to being mentioned along with nurses and social workers.)

On the other hand, more and more psychologists are leaving hospitals and clinics to enter private practice, and some to open their own clinics. They do so because they can make more money and because the medical practice act does not *specifically* prohibit them from doing so. In contrast to many doctors of philosophy in other fields, they are likely to place emphasis on their title *doctor*. In social situations some psychologists, by referring to having

*Psychiatry in a Troubled World (p. 244-5); The Macmillan Company, New York, 1948.

done such and such in their internships and having seen this and that kind of patient, attempt to convey the impression that they are physicians. By not clarifying their position with patients, they may pretend to be physicians or, more specifically, psychiatrists. The confusion that exists in the minds of patients who have been treated by psychologists cannot be attributed solely to the patient. Despite the fact that they have not been trained medically and are not physicians, some psychologists, including leaders in the profession, insist upon equal rights with physicians in hospitals. They see no reason why they should not be permitted to function as independently in a general hospital as an orthopedist or a neurologist.

There are some who profess the propriety of being medically supervised in their private practice. By this they mean a physician maintains responsibility for the physical care of the patient, but not that their own treatment is medically supervised. In some instances, while working as students in hospitals, they have objected to the psychiatric resident interfering in "their cases."

All of this adds up to the fact that persons who are not medically trained are assuming responsibility for the diagnosis and treatment of patients. They receive direct pay for their services and in many instances patients mistakenly believe that they are being treated by physicians, or do not have clear knowledge of what the difference is between a psychiatrist and a psychologist.

Physicians themselves are in great part responsible for this development. They make hospital and clinic facilities available for the training of the psychologist and assist in his training without any clear understanding about what the psychologist is being trained for. Out of ignorance, personal friendship or fear of losing patients to another physician, they refer patients to psychologists for diagnosis and treatment. The medical profession has not provided through its own leadership the opportunity for psychologists to utilize their skills in a legitimate and supervised way in the treatment of private patients. And finally, many physicians have not themselves taken sufficient interest in modern methods of treating patients with psychogenic disorders. Some physicians think patients will object less to being sent to a psychologist than to a psychiatrist. They are afraid patients will feel their sanity is being questioned if they are referred to a psychiatrist. In the old days patients were told they were being sent to a neurologist. Some physicians fear that if they send the patient to a psychiatrist they will not get him back. Some physicians think it will not cost the patient as much to be treated by a psychologist as by a psychiatrist, and some are still pretty disgruntled with psychiatrists because it was so difficult to get them to see patients during the war.

A psychologist, through continued supervised work with patients in psychiatric hospitals and clinics, may achieve a considerable degree of skill in working with patients, although there are important differences between him and a psychiatrist. In this respect he is like the radiology technician who, in the course of years of taking and developing x-ray films, develops a high degree of skill in taking films and in recognizing pathologic changes in them.

There is no reason why psychologists should be forced to stay in intramural work, but unless some means is developed for using them in private medical practice, they will go into practice on their own. If the psychiatric team is a feasible and practical approach to spreading the base of psychiatric treatment in hospitals and clinics, it should be applicable to private practice settings too.

In assisting in the diagnosis and treatment of patients, the psychologist should function as an assistant to the physician. This involves no compromise with the principle that prime responsibility for the diagnosis and treatment of the patient is the physician's. The patient is the physician's patient throughout, although the physician may delegate certain aspects of his function to a psychologist assistant as he now does to nurses, physiotherapists, laboratory technicians and other ancillary workers. The nature and degree of delegated responsibility will vary with the experience and competence of the psychologist.

According to principles of good medical practice, physicians do not employ assistants whose work they are unable to supervise. A radiologist may properly employ x-ray technicians, for he is in a position to know what duties to delegate and is competent to supervise what is done. He is not likely, however, to employ a physiotherapist or bacteriologist. He is not legally prevented from doing so but is guided by considerations of good practice. By virtue of his training and experience it is the psychiatrist who is qualified to supervise the work of the psychologist—be it in diagnosis or treatment—and until such time as the medical profession in general is better acquainted with the complexities of psychiatric diagnosis and with psychotherapeutic techniques and the indications for them, the use of psychologist assistants should be (in good medical practice) left to the psychiatrist. The psychiatrist should provide space, equipment and other needs for the psychologist. The psychologist should be paid a salary that is consistent with his training

and experience and with the level of responsibility that he can be assigned.

Many objections will be raised to such a plan. Some practitioners, without adequate psychiatric competence, will be tempted to have their own psychologist assistants (as many purchased and used their own electroshock machines) in order to avoid referring patients and the loss of income that might be involved. Some psychiatrists, interested in mass production and size of income, may be tempted to employ a staff of psychologists far beyond their ability to adequately supervise. Other psychiatrists will protest that the psychologist is not qualified to treat patients and they should therefore not be utilized in private practice by anyone (although they raise no objection to their working in clinics or hospitals). Other psychiatrists will not wish to be bothered taking on this additional responsibility and will take the position, "Let the psychologist practice if he wishes." These are the psychiatrists who have grown apart from medicine and its ever-present problem of maintaining high standards.

Psychologists can be expected to object most of all. The psychiatric supervision which is accepted and even sought in hospitals and clinics suddenly takes on an odious aspect because it is in conflict with private independent practice aspirations. They will accept the type of medical supervision that involves the physician's treating the patient's physical ills, while they treat the emotional ills. They are not concerned that this entails separation of the psyche and the soma—which medicine has labored so hard to bring together in recent years. Nor are they likely to be interested in the better psychiatric education of the medical profession, of which they are not a part. Some psychologists in private practice entice psychiatrists into acting as a consultant to them (for a fee); but this is done without the knowledge of the patient who continues to look upon the psychologist as his doctor.

Do-gooders with a pragmatic approach are usually more interested in quantity than quality and are not likely to be concerned with such immaterial matters as maintenance of educational standards or standards of practice or ethics. They recognize needs and seek to satisfy them regardless of cost or consequence. If it is psychotherapy that is required, then it matters little to them who provides it. The conservatism and caution and tradition of medicine with its deeply rooted preoccupation with a sense of responsibility for patients is considered outmoded and impractical.

The time has come for the medical profession to give careful consideration to this problem which is growing daily. The medical profession is making its facilities available to and assisting in the training of the clinical psychologist. Does it know for what they are being trained? Does it appreciate the significance of the increasing tendency of psychologists to use the terms *psychiatric help* and *psychologic help* as if they were synonymous? Is it aware of the tendency of an increasing number of psychologists to foster the belief that psychotherapy is the only important method of treatment in the care of patients with mental and emotional ills and that the psychologists are better trained to handle this phase of treatment and on an exclusive basis? Does it know of the contempt many psychologists have for the intuitive psychotherapy that physicians practice in their daily contact with patients?

Well-trained psychologists are concerned about the growing numbers of untrained persons who call themselves psychologists and engage in psychological practice; they are not as inclined to appreciate similar concern on the part of the medical profession with maintenance of its standards.

Psychologists in many states have been pressing for certification or licensing types of legislation. In at least one state (Tennessee) the proposed licensure bill includes *psychotherapy* in the definition of approved psychological practice.

In numerous discussions regarding the role of the psychologist in psychotherapy, the question is inevitably raised, "What is psychotherapy?" And the related questions: "Is the minister practicing psychotherapy when a member of his congregation seeks his advice regarding a marital problem? Is the school psychologist practicing psychotherapy when he discusses with a mother the maladjustment of her child in the classroom? Is a neighbor practicing psychotherapy when she comforts and advises the woman next door who is upset and comes to her for help?"

More specifically the question is asked, "Where does counseling end and psychotherapy begin?" In this connection one might ask: Is a citizen who administers first aid to an injured person practicing medicine? Is the neighbor who advises her friend to take an aspirin tablet practicing medicine? Is the mother who takes her child's temperature and looks at its throat practicing medicine? A major point in the answer to these questions is the *auspices* under which the aid is given or the action taken. And it is to be noted well that the citizen, the neighbor, the mother do not hold themselves out as practitioners.

California Law (Business and Professions Code, Division 2—Healing Arts, Chapter 5—Medicine, Article 3, Section 2141) states: "Any person, who practices or holds himself out as practicing any system or mode of treating the *sick*, or *afflicted* in this state, or who *diagnoses*, treats, operates for,

or prescribes for any ailment, blemish, deformity, disease, disfigurement, disorder, injury, or other mental or physical condition of any person without having at the time of doing so a valid unrevoked certificate as provided in this chapter is guilty of a misdemeanor."

Section 2013 of Article I of the same law states, "Whenever the words *diagnose* or *diagnosis* are used in this chapter, they include any undertaking by any method, device, or procedure whatsoever, and whether gratuitous or not, to ascertain or establish whether or not a person is suffering from any physical, mental, or nervous disorder . . ."

"The performance of psychological services on referral from a person licensed under this chapter is not a violation of this chapter. Testing and guidance programs in schools, colleges, and universities and physical fitness tests given by public or private agencies in connection with employment or issuance or renewal of licenses or permits do not constitute diagnosis within the meaning or intent of this section."

The term *psychological services* does not imply the diagnosis and treatment of mental ailments, disorders or conditions.

It is of interest that the Business and Professions Code specifically provides that a registered physical therapist shall not treat human ailments by physical therapy or otherwise except under the supervision and direction of a physician and surgeon.

No provision now exists for the certification of clinical psychologists. The need for some regulation of the use of the term *psychologist* has been felt increasingly by well-trained psychologists in order to protect the public from quacks and inadequately trained and incompetent people who present themselves to the public as psychologists. This is a particularly serious problem in Los Angeles.

Any law that is introduced to eliminate the quack psychologist should specifically define psychotherapy and prohibit the treatment of mental or emotional disorders by psychologists except when it is under the supervision and direction of a physician. Otherwise there is great danger that licensing or certification would be used by many psychologists to engage in independent practice of diagnosis and treatment of patients with emotional and even psychosomatic illnesses.

This already threatens to develop in New York State where, because of lack of vigilance and even lack of interest on the part of the medical professions and because of ignorance or misunderstanding on the part of the public, a statute has been passed providing for certification of clinical psychologists. A completely independent board of examiners, composed entirely of psychologists is created. In the opinion of legal counsel for the California Medical Association, the statute creates a new legally authorized profession which in the absence of any legal controls will establish its own area of function. Counsel noted that while the statute contains a provision which states that practicing medicine is not authorized, the newly established board cannot be expected to have any real interest in enforcing this provision. The net effect of the New York State law, it was concluded, was to create a wholly independent, self-determining profession that will compete with doctors of medicine who specialize in psychiatry, in the diagnosis of mental disorders and the utilization of psychological methods of treatment. Counsel was of the opinion that there is no difference between certification and licensure as far as the New York law is concerned.

Psychologists in California are pressing for similar legislation not only at the state but also at the local level. As recently as September 12, 1956, a Los Angeles City Councilman presented a resolution to the city council in support of an ordinance to certify or license psychologists.

The medical profession is obligated to take its traditional role in providing the best treatment for the largest number of patients who are in need of it, and psychotherapy is an inherent part of treatment. A physician who accepts responsibility for the treatment of a patient assumes full medical responsibility, and while he may utilize the services of other disciplines, he cannot relinquish to a nonphysician his medical responsibility. To this end, it is important that increased attention be given to the psychiatric instruction of physicians in medical schools, in internships and residencies and in postgraduate education. It is as important for every physician to have knowledge of the basic principles of the diagnosis and treatment of mental and emotional disorders, as it is for them to have such knowledge about diabetes and heart disease. If the medical profession is to encourage and participate in the training of clinical psychologists as members of the psychiatric team, it is important that psychiatrists provide the opportunity for them to function in this capacity in private practice settings.

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Mumps Meningoencephalitis

A Clinical Review of 119 Cases with One Death

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• **Mumps is one of the most common viruses to affect the central nervous system and should be given primary consideration in the differential diagnosis of aseptic meningitis. Many cases of mumps infection do not involve the salivary glands.**

The course of mumps meningoencephalitis is usually benign, with fever and signs of meningeal irritation lasting less than five days. The findings in the cerebrospinal fluid are usually distinctive, with leukocyte content greater than 200 per milliliter, of which 80 per cent or more are lymphocytes. Sequelae, even of a minor nature, are rare.

Death is extremely rare in recorded literature. A fatal case of mumps meningoencephalitis is described herein.

MUMPS IS A generalized, systemic, virus infection in which the salivary glands are commonly affected and in which inflammation of the central nervous system occurs with such frequency that it can hardly be considered a complication. In fact, the virus of mumps could be said to be one of the most common viral agents to affect the central nervous system. Despite the extensive literature attesting these facts, there still exists the widespread impression that mumps meningoencephalitis is a rare complication.

Hamilton[10] in 1790 presented one of the first formal reports of "A Distemper, By the Common People in England Vulgarly Called the Mumps." In this very carefully written report he described the usual course of this disease and stressed the frequency of central nervous system involvement. It was his opinion that inflammation of the testicles and the brain was the result of failure of a proper diaphoresis of the affected parts. He described one death due to this "tumult of the brain." It is interesting that this author noted that the disease was generally confined to young men from the age of puberty to about 30 years and stated that he had never seen any females above ten years of age affected by this illness.

A unique feature of mumps is the observation of pleocytosis, as evidence of inflammation of the central nervous system, unaccompanied by any clinical symptoms of encephalitis or meningitis. Monod[18] was the first to report this symptomless meningoencephalitis. He noted increased leukocyte content in the spinal fluid of six of eight patients with mumps.

In the literature of the last 50 years there have been a number of investigations of mumps with reports of the incidence of central nervous system involvement. Table 1 summarizes a number of these reports. The rather wide variation in the incidence of clinically apparent nervous system disease will be noted. While it is true that the factor of clinical judgment modifies data of this type, it is nevertheless rather hard to escape the conclusion that the virus may vary from one epidemic to the next in neurotropic quality. Henderson's[11] report of 11 cases of clinically apparent central nervous system involvement in a total of 14 cases of mumps infection, was most striking.

It is, however, rather difficult to reconcile the incidence in 1918-1920 U. S. Army camps of 0.01 per cent of clinically apparent mumps meningoencephalitis with the usual 10 to 30 per cent incidence reported since then. It would seem likely that a more careful clinical evaluation with the possibility of central nervous symptoms in mind would have raised this incidence rather sharply. Despite such variations it would seem safe to presume that in 30 to 40 per cent of cases of mumps infection there will be central nervous system involvement with clinical symptoms not necessarily apparent.

The exact pathogenesis of this central nervous system involvement by the virus has been given consideration since Hamilton,[10] over 150 years ago, looked upon it as the result of a disturbance of the course of the natural "humors" of the disease. Over 40 years ago Dopter[6] suggested that the mumps virus should be considered as being primarily in the meninges rather than to "consider the meningitis as a complication." His study of a large number of cases of mumps is summarized in Table 1.

Some 20 years ago Philibert[21] restated the belief, on the basis of the frequency of the occurrence of pleocytosis, that the virus of mumps was primarily neurotropic. He felt that the disease might be primarily one of the central nervous system, as illus-

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TABLE 1.—*Incidence of Meningoencephalitis in Mumps, Clinically Apparent or Inapparent, as Summarized from Published Investigations*

Authors	Year	Total Cases Studied	Incidence Clinically		Total Central Nervous System Incidence (Per Cent)
			Apparent (Per Cent)	Inapparent (Per Cent)	
Dopter[6]	1910	1,705	10	....	....
U. S. Army Medical Department (Wesselhoeft[25] data)	1918-20	9,690	0.01	....	....
Silwer[22]	1936	30	....	10	....
Greene and Heeren[6]	1937	100	11	....	....
Finkelstein[7]	1938	40	25	15	40
Frankland[8]	1941	234	30	....	....
Bang and Bang[2]	1943	371	29	36	65
McGuinness and Gall[17]	1944	1,378	4	....	....
Steinberg[23]	1944	165	10	....	....
Holden, Eagles and Stevens[14]	1946	100	33	8	41
Laurence and McGavin[16]	1948	235	4	....	....
Henderson[11]	1952	14	78	....	....
Bowers and Weatherhead[3]	1953	250	25	....	....

trated in several cases which he reported in which meningitis preceded parotid gland involvement.

These early hypotheses received eventual confirmation in the isolation and identification of the mumps virus from cerebrospinal fluid. Swan and Mawson,[24] in 1943, accomplished the isolation of the virus from pooled saliva as well as from cerebrospinal fluid inoculated into the parotid glands of rhesus monkeys. Later, in 1947, Henle and McDougall[12] isolated the mumps virus from the cerebrospinal fluid taken on the second day of disease and injected into the amniotic fluid of fertile hens' eggs that had been in incubation for eight days. The virus was identified by specific hemagglutination tests. It is now well accepted that such virus isolation from cerebrospinal fluid is easily done by this method.

It would thus seem that the central nervous system is directly involved with mumps virus invasion and that the signs, symptoms and laboratory findings are not of a nonspecific type sometimes found in other viral diseases.

The present study, a review of 119 cases of mumps meningoencephalitis in patients who were cared for at the San Francisco Hospital, is presented in order to stress not only the frequency of such manifestations of mumps virus infection but also to review briefly the clinical features and the typical laboratory findings. A single fatal case will be presented in detail because of the rarity of this result and the lack of detailed pathological findings available in the recorded literature.

MATERIAL AND METHODS

All the patients upon which the present investigation is based were hospitalized on the isolation ward of the San Francisco Hospital in the 12-year period 1943-1955. All were observed by one of the present investigators. Records were studied in which the diagnoses at the time of discharge included mumps or infectious parotitis, as well as records including a diagnosis of encephalitis of unknown origin, or septic meningitis. In the earlier years of the period covered by this study, the importance and frequency of central nervous system involvement in mumps was not fully appreciated and several of the patients whose cases are reported herein were discharged with a diagnosis of encephalitis of unknown origin, as well as infectious parotitis. The criteria for attributing central nervous system disease to mumps virus were: (1) parotitis or other salivary gland involvement typical of mumps; or (2) a significant rise of either hemagglutination inhibition antibody or complement fixing antibody. Also included in the series were three cases, before 1948, in which the clinical manifestations of central nervous system disease resembled those of mumps meningoencephalitis and in which a history of exposure and compatible incubation period for mumps was well established.

Serological tests were performed after 1948 at the Infectious Disease Laboratory of the San Francisco Hospital or at the State of California Department of Public Health Viral and Rickettsial Disease Laboratory. Central nervous system involvement in this series of cases was invariably clinically apparent with obvious signs of meningeal irritation. In most cases, lumbar puncture was done and the finding of more than 10 leukocytes per milliliter of cerebrospinal fluid was considered abnormal. In a few instances, the observation of signs of meningeal involvement accompanying parotitis was considered sufficient to establish the clinical diagnosis without examination of cerebrospinal fluid.

RESULTS

During the 12 years covered by the present study there was a total of 119 cases at San Francisco Hospital that met the criteria set down for the diagnosis of mumps meningoencephalitis. Data on the number of cases of mumps each year in San Fran-

cisco and the number of patients with mumps meningoencephalitis admitted to San Francisco Hospital are given in Table 2. The number of patients with central nervous system involvement admitted to the hospital bore no relationship to the total number of cases of mumps reported in the community. In 1945, for example, with 4,741 cases of mumps reported in the city and county, there were 19 patients with central nervous system involvement admitted to the San Francisco Hospital. On the other hand, in 1952, with 1,822 cases of mumps reported, there were 27 patients with mumps meningoencephalitis admitted to the San Francisco Hospital. It would seem that this disparity could be due to a large number of factors—such as varying diagnostic acumen or special interest of house officers and the varying severity of the symptoms of mumps meningoencephalitis. It would, therefore, be quite wrong to state that the 119 cases of mumps meningoencephalitis represented a rate of 0.4 per cent of all the cases of mumps in San Francisco. It may be noted in this connection that commencing in 1948, with the introduction of serologic diagnostic facilities at the San Francisco Hospital, the observed incidence of central nervous system involvement without parotitis increased. (The three cases in the previous years were mentioned in the discussion of diagnostic criteria.)

Of the 119 patients, 84 males and 35 females, twenty-four were negroes. Ninety of the patients were less than 20 years of age and 65 of them were under the age of 10 years. There was only one patient more than 40 years of age.

In 79 cases (66.4 per cent) a diagnosis of mumps or of mumps encephalitis was made at the time the patient was admitted (Table 3). It should be restated, however, that in the early years of the period covered by the present study the possibility of central nervous system involvement in this disease was not often recognized and subtle symptoms were occasionally missed upon admission. Correct diagnosis of "mumps encephalitis" upon admittance occurred predominantly in the last six years of the period.

It will be noted that there were four patients admitted with the diagnosis of mumps orchitis, with central nervous system involvement detected later. It should be emphasized that the reason for admitting a patient with mumps to the hospital was usually related to some factor besides the etiological diagnosis. It is probable that severity of parotitis was such a factor and central nervous system involvement was detected subsequently. This factor would apply in the four cases of mumps orchitis which, of itself, would be a strong reason for admission.

The diagnosis of "possible poliomyelitis" was made on admission in 11 cases. In two such cases, parotid involvement was present at the time the tentative diagnosis was made. This is mentioned here because the diagnosis of poliomyelitis in the face of parotid swelling dramatizes the all too common ignorance of the potentialities of the virus of mumps. In the differential diagnosis of the syndrome of "nonparalytic poliomyelitis," mumps should be considered as a prominent possibility even in a known poliomyelitis epidemic.

The remaining diagnoses upon admittance represented a variety of symptom complexes, many of them compatible with mumps meningoencephalitis. In the case of "fever of unknown origin," meningismus was detected upon arrival at the ward and lumbar puncture was done on the day of admission. The case of cervical adenitis was found to be one of submaxillary mumps. The patients admitted "for psychiatric observation" and "for observation" were very lethargic and disoriented on admission. Most

TABLE 2.—*Mumps Meningoencephalitis at San Francisco Hospital*

Year	Cases of Mumps Reported in San Francisco	Parotitis CNS* (SFH)†	CNS only (SFH)	Total CNS (SFH)
1943	1,643	6	1	7
1944	2,058	5	0	5
1945	4,741	18	1	19
1946	809	1	1	2
1947	832	4	0	4
1948	3,044	7	1	8
1949	1,734	7	1	8
1950	1,987	10	1	11
1951	1,358	7	5	12
1952	1,822	18	9	27
1953	2,925	6	1	7
1954	1,331	4	0	4
1955	1,368	3	2	5

*CNS = Central nervous system involvement.
†San Francisco Hospital.

TABLE 3.—*Diagnosis at Time of Admittance in Cases of Mumps Meningoencephalitis at San Francisco Hospital*

Diagnosis	CNSD* with Parotitis	CNSD only	Total
Mumps	32	....	32
Mumps encephalitis	44	3	47
Encephalitis	....	1	1
Meningitis	2	7	9
Mumps orchitis	4	....	4
Possible poliomyelitis	2	9	11
Fever unknown origin	1	1	2
Cervical adenitis	1	....	1
For psychiatric observation	1	....	1
Otitis media	1	....	1
Acute pyelonephritis	....	1	1
Pelvic inflammatory disease with cystitis	1	....	1
Acute tonsillitis	1	....	1
For observation	1	1	2
Meningococcemia	1	....	1
Pharyngitis	1	....	1
Central nervous system lesion	1	....	1
None given	2	....	2

*CNSD = Central nervous system disease.

TABLE 4.—*Comparison Between Diagnostic Impression of Physician and Ultimate Serological Results in Proved Cases of Mumps Meningoencephalitis (Data from State of California Department of Public Health Virus and Rickettsial Disease Laboratory)*

Year	Total Tested for Mumps	Total Positive for Mumps	Number with		Per Cent Positive with Mumps or Meningoencephalitis Diagnosis	No. with Encephalitis, Meningitis, Poliomyelitis or LCM†	Per Cent Positive with Encephalitis or Other
			Mumps*	Meningoencephalitis*			
1952....	2,113	152	51	40	59.8	61	40.2
1953....	1,626	210	66	76	67.6	68	32.4
1954....	1,729	227	64	100	72.2	63	27.8
1955....	1,674	143	62	48	76.9	33	23.1

*Stated as diagnostic possibility on form completed by physician submitting blood specimens to laboratory.
†Includes diagnoses of "lymphocytic choriomeningitis," "encephalitis of unknown origin," and viral nervous system infections.

of the remaining diagnoses represented valid disease states present in patients who were found later to also have central nervous system involvement with mumps.

By way of further studying the diagnostic impression of the physician in cases of mumps meningoencephalitis, data were collected from the records of the State of California Viral and Rickettsial Disease Laboratory.* These data (Table 4) show an increasing incidence of correct diagnostic impression on the part of the physicians submitting specimens of blood to the laboratory for serological diagnosis in the four years 1952-1955, inclusive. The data also show that the number of physicians who did not consider mumps as an etiologic possibility in cases of central nervous system disease, steadily decreased in the period. It should be emphasized that the data deal only with cases of mumps meningoencephalitis in which serological specimens were submitted for diagnosis and should not be construed as reflecting the total incidence of this disease in the state.

The chief complaints or first symptoms noted on admission of the 119 cases of mumps meningoencephalitis are summarized in Table 5. With very few exceptions, the symptoms were referable to central nervous system disease or parotitis. The single case of hematuria was observed in the patient with acute pyelonephritis listed in Table 5.

Laboratory findings in these cases make a significant contribution in diagnosis. The most important studies in this category were determination of the leukocyte content in peripheral blood and the examination of the cerebrospinal fluid. The total leukocyte count in 101 of the 119 cases was less than 12,000 per cu. mm.; in the remaining 18 cases it did not exceed 16,000.

Laboratory examination of the cerebrospinal fluid provides the most significant criteria for establishing the diagnosis of mumps meningoencephalitis. Often the findings are so characteristic that mumps may be presumed even in the absence of salivary gland involvement.

*These data were obtained through the courtesy of Edwin H. Lennette, M.D., Chief, Viral and Rickettsial Disease Laboratory, State of California, Department of Public Health.

TABLE 5.—*Frequency of Various Presenting Symptoms in Cases of Mumps Meningoencephalitis at San Francisco Hospital*

First Symptom or Complaint	CNSD* with Parotitis	CNSD only
Parotid swelling	59	....
Headache	31	15
Anorexia	5	1
Fever	13	10
Vomiting	21	8
Lethargy	12	5
Submaxillary pain	3	....
Abdominal pain	2	5
Stiff neck	6	1
Convulsions	2	....
Painful chewing	1	1
Upper respiratory tract infection	1	3
Chills	1	....
Tremulousness	1	....
Back pain	4	1
Irritability	2	1
Earache	4	....
Sore throat	2	1
Diarrhea	2	1
Pain in testicles	2	....
Hematuria	....	1
Frequency	....	1
Pain in eyes	....	1
Difficult walking	....	2

*Central nervous system disease.

Lumbar puncture was carried out in all but 18 of the 119 cases. In these 18 cases, diagnosis seemed to be so clear that further laboratory study was deemed unnecessary. With only two exceptions, the spinal fluid pressure was within normal limits; in these two exceptions the pressure was elevated only slightly.

The leukocyte content of the cerebrospinal fluid in 101 cases is summarized in graphic form in Chart 1, which also gives the same data on 708 cases of poliomyelitis which were studied during an epidemic in Buffalo, New York, in 1944.[4] Distinguishing between mumps meningoencephalitis and poliomyelitis without apparent paralysis is a common diagnostic problem. It is apparent from Chart 1 that in many cases the leukocyte content of the cerebrospinal fluid will help resolve this problem. In 55.3 per cent of the cases of mumps meningoencephalitis the leukocyte content exceeded 200 per milliliter of cerebrospinal fluid; this concentration was noted in only

11.5 per cent of the cases of poliomyelitis. The corresponding ratio for leukocyte content of more than 40 per milliliter was: For mumps meningoencephalitis, 26.7 per cent; for poliomyelitis, 1.8 per cent.

The character of leukocytes in the spinal fluid was also of great significance. Differential count was carried out in 96 cases. In 91.6 per cent of these cases lymphocytes made up 80 per cent or more of the total; in 69.7 per cent of the cases the proportion of lymphocytes exceeded 90 per cent. There were only two cases in which the first specimen of cerebrospinal fluid showed predominantly polymorphonuclear leukocytes and, in both of these cases lymphocytes predominated in later specimens. There were seven cases with 70 to 80 per cent lymphocytes and six cases with less than 70 per cent lymphocytes. These findings would seem to contrast with those in poliomyelitis in the early stages, where 50 per cent or more of the cells may be polymorphonuclear leukocytes.[20]

Multiple lumbar puncture was carried out in only ten cases. In two of these cases the leukocyte content exceeded 30 cells per milliliter of fluid on the twentieth day of disease. In neither case were there symptoms of central nervous system disturbance at the time of the last lumbar puncture.

Chemically the spinal fluid was within normal limits, with the exception of a small number of cases showing a slight elevation of protein and correspondingly positive reaction to the Pandy test.

The hospital course in most of these cases was entirely without complication and most patients were discharged between six and ten days after admission. The significant exceptions to this benign course are reported in case histories presented later in this communication. Ninety of the 119 patients had body temperature of 102°F. or more within the first three days of hospitalization. The febrile reaction was usually less than three days in duration. Nine patients had fever for over five days of hospitalization. In one case fever persisted for 13 days. With respect to severity of disease there were no apparent differences between patients above 15 years of age and younger patients. There was a notable absence of neurological sequelae.

The following reports of cases are presented to give examples of various features of the usual clinical course of mumps meningoencephalitis.

CASE 1. *Mumps with salivary gland involvement following appearance of central nervous system symptoms.*

A 22-month-old white boy was admitted with a diagnosis of mumps encephalitis. Two weeks before admission, a sibling had had mumps with bilateral parotid involvement. Five days before admission, the patient began to be extremely irritable and vomited several times each day. Two days before admission there was a swelling on the right side of the face.

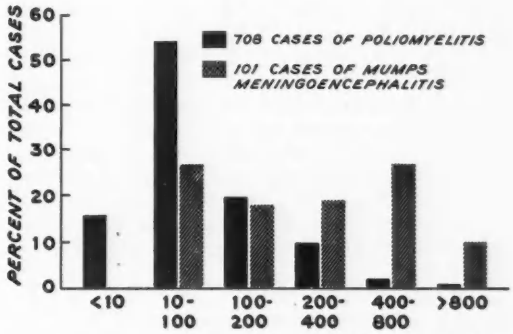

Chart 1.—Leukocyte content of cerebrospinal fluid in poliomyelitis (from epidemic in Buffalo, N. Y., in 1944) and mumps meningoencephalitis (San Francisco Hospital series).

The child, who appeared to be in no acute distress, had bilateral submandibular salivary gland swelling and a temperature of 104°F. rectally. There was slight stiffness to the neck but the back was supple.

Leukocytes numbered 11,000 per cu. mm. of blood—68 per cent lymphocytes.

A specimen of cerebrospinal fluid drawn the first day contained 740 leukocytes per milliliter—85 per cent lymphocytes. The protein content was 41 mg., sugar 61 mg. and chlorides 684 mg. per 100 cc.

The body temperature ranged between 101 and 102°F. for the first two hospital days and then remained within normal limits. On the third hospital day the results of physical examination were entirely within normal limits.

Serological tests showed hemagglutination inhibition titer against mumps on the first hospital day of 1:32, with a subsequent specimen taken a week later showing a titer of 1:256.

The patient was discharged after eight hospital days.

CASE 2. *An example of mumps parotitis without clinical evidence of central nervous system involvement and with cerebrospinal fluid changes consistent with mumps meningoencephalitis.*

A ten-year-old negro girl was admitted with a history of pain on eating and a swollen neck one week before admission, at which time mumps was diagnosed in a male sibling. These symptoms had subsided in three days. Then, three days before admission, the body temperature was 103°F. and the patient had headache, pain in the neck, a nasal discharge and cough.

Upon physical examination generalized slight enlargement of the lymph nodes was noted, without involvement or enlargement of the parotid or submaxillary glands. There was no evidence of nuchal rigidity, back pain or stiffness. The temperature was 104.3°F.

In view of the history of exposure to mumps and suggestion of parotitis before admission, lumbar puncture was performed. The cerebrospinal fluid contained 490 cells per milliliter, all lymphocytes, the protein content was 37 mg. per 100 cc., sugar 92 mg. and chlorides 867 mg. Examination of the cerebrospinal fluid was carried out six days after admission (13 days from onset of disease) and there were then 483 cells per milliliter—almost all lymphocytes. Another specimen, taken 21 days after onset of illness, showed 30 cells per milliliter—again all lymphocytes.

Serological examination of a specimen of blood taken on admission showed hemagglutination inhibition titer against mumps of 1:32. A specimen one week later had a titer of 1:128.

The temperature was 101°F. on the second hospital day, and thereafter remained within the normal range.

CASE 3. *An example of pronounced meningeal involvement without evidence of salivary gland infection.*

A six-year-old negro boy was admitted to hospital with a diagnosis of meningitis of unknown cause. Eleven hours before entry he had complained of a sudden and severe pain in the back of the head and was noted at that time to be feverish. About five hours later he awoke crying and complaining of a severe headache.

When examined on admission he was rational and cooperative but lethargic and complaining of pain in the back of the head. The temperature was 103.8°F. Petechiae were noted in the bulbar conjunctivae and in both axillae. The blood vessels in the pharynx were moderately engorged. The tongue was heavily coated. The neck was stiff to anterior flexion and the reaction to Kernig's test was bilaterally positive.

Leukocytes numbered 8,500 per cu. mm. of blood —20 per cent lymphocytes and 80 per cent polymorphonuclear cells. The cerebrospinal fluid contained 810 leukocytes per milliliter, 50 per cent of which were polymorphonuclear. The protein content was 47 mg. and the sugar content 86 mg. per 100 cc. No organisms were seen on a Gram-stained specimen of the concentrated sediment. Bacteriological cultures were reported later as negative for pathogenic organisms.

In view of the prominent possibility of meningococcic meningitis, sulfadiazine and penicillin were given parenterally. On the day of admission the patient had a convulsive seizure of grand mal type which lasted about five seconds, following which the abdomen became decidedly distended. On the following hospital day, the condition of the patient seemed to improve but prominent abdominal distention remained. The patient had a stiff neck and complained of headache. The sensorium appeared clear, but he was very irritable.

A specimen of cerebrospinal fluid taken the second hospital day contained 842 leukocytes per milliliter, of which 90 per cent were lymphocytes.

On the third hospital day, neck stiffness had decreased considerably and the body temperature was within normal range. On the 12th hospital day the cerebrospinal fluid contained 140 leukocytes per milliliter, all lymphocytes.

The patient was discharged from the hospital on the fifteenth hospital day.

Hemagglutination inhibition antibody titer in this case rose from less than 1:8 on the third hospital day to 1:512 nine days later.

CASE 4. *A fatal case of mumps meningoencephalitis.*

A white boy 10 years of age was admitted to hospital with a diagnosis of mumps encephalitis. Eight days before admission he had had bilateral swelling of the face accompanied by warmth and tenderness. Two weeks before admission, a 15-year-old brother had had mumps and three other siblings had mumps with parotitis at the time of admission. Four days before entry the patient had vomited but had not complained of headache or pain in the back of the neck. Since that time he had vomited several times each day and on the day of entry had had a generalized convulsion, the whole body becoming rigid, arms flexed, hands clenched, the eyes wide open and staring. This seizure had lasted approximately five minutes and was followed by repeated episodes of stiffening and relaxation of the whole body over the two-hour period before entry into the hospital, during which time the patient did not seem to be conscious. There was no history of previous convulsive episodes. It should be noted that four months previously this child had been injured in a bad fall and upon x-ray examination a short linear skull fracture was noted in the right occipital parietal region.

When examined upon admittance the child seemed to be in a coma. The temperature was 99.4°F. The skin was dry, but without petechiae. The eyes were rolling from side to side and the pupils were dilated but equal. The tongue was bleeding slightly from a laceration. No rigidity of neck or back was noted. The submaxillary salivary glands were large and hard. The extremities were held stiff. Reflexes were normal.

Leukocytes numbered 19,550 per milliliter—63 per cent polymorphonuclear cells.

The cerebrospinal fluid contained 22 lymphocytes per milliliter. The protein content was 37 mg., sugar 107 mg., and chlorides 704 mg. per 100 cc. Cultures of blood and of cerebrospinal fluid were subsequently reported as negative for pathogenic organisms.

The body temperature rose steadily to 107°F. in spite of control measures, and the patient died approximately four hours after admittance. Autopsy was done at the Coroner's office of the City and County of San Francisco and the following pathological findings were reported:

"Significant gross and microscopic findings were confined to the central nervous system. The brain

and meninges were grossly edematous with extreme flattening of the gyri and sulci. There was no apparent skull fracture. The brain weighed 1,575 gm. and measured 18 x 15 x 10 cm. The undersurface of both frontal lobes contained fine areas of brown discoloration involving the gyris recti on both sides. Numerous small areas of hemorrhage were seen in the leptomeninges. The hemispheres were symmetrical, with flattened convolutions and shallow sulci. The surface vessels of the brain were markedly congested. Cut sections through the brain showed symmetrical, undilated ventricles and smooth ependymal linings. On the right lateral surface of the brain at the base of the temporal lobe, there were two areas of degeneration approximately 1 x 1 x 1½ cm. running down through the external and internal pyramidal layers. There was no gross evidence of encephalitis.

"Microscopically there were many areas with degeneration of nervous substance and infiltration with lymphocytes. There was an unusually large collection of compound granule cells. The deep small vessels of the brain were congested and surrounded by thin collections of lymphocytes."

The pathological diagnosis was posttraumatic degeneration accompanied by meningoencephalitis. No virus isolation studies were undertaken.

DISCUSSION

It is clear from the recorded literature and from the observations reported herein that mumps meningoencephalitis should be a commonly encountered condition in pediatric and general practice. It has also been apparent that this observation is not commonly appreciated.

Mumps meningoencephalitis is probably the most common cause of the syndrome of "aseptic meningitis." The diagnosis of mumps as the cause for such a central nervous system condition is based on a number of criteria, of which the presence of parotitis or history of exposure to mumps would be the most significant. It should be strongly emphasized, however, that a very substantial proportion of persons undergoing infection with mumps virus will have no signs of salivary gland involvement.[13] Furthermore, it has been demonstrated serologically that a significant proportion of cases of "aseptic meningitis," in the absence of parotid or salivary gland involvement, are, in fact, due to mumps virus.[15] The small proportion in the present series of cases in which there was no parotid involvement does not reflect the true proportion of such cases, but rather reflects the factors leading to admission to the hospital.

The clinical findings in cases of mumps meningoencephalitis often will suggest the proper etiological diagnosis. In most cases, meningismus subsides rapidly along with the fever, over the course of two or three days. This is in contrast to poliomyelitis, in which the stiffness of neck or back may become more severe after the temperature has subsided. The absence of any weakness would certainly raise the question of mumps as an etiologic possibility. In severe cases of mumps meningoencephalitis in which coma and lethargy and high fever are prominent symptoms, a variety of other viral encephalitides will remain prominent in the differential diagnosis.

One of the most commonly encountered situations in which the differential diagnosis should be satisfactorily resolved is that of the patient for whom the diagnosis of poliomyelitis with clinically inapparent paralysis is considered. If mumps can be diagnosed as the cause, then all the long term considerations attendant upon the diagnosis of poliomyelitis may be dismissed. On the other hand, if proof of mumps is not forthcoming, long term follow-up with careful examinations to detect the appearance of muscle weakness will be necessary. The economic implications of this situation would seem obvious.

It is often necessary for the physician to depend upon serological studies to establish the diagnosis of mumps meningoencephalitis. These tests are readily available through the State of California Department of Public Health Viral and Rickettsial Disease Laboratory in Berkeley, provided local facilities are not available. Such laboratory studies should be given early consideration and appropriate blood specimens should be submitted to the laboratory. In a case where viral encephalitis is considered a likely cause for the clinical condition, an early or "acute" blood specimen should be obtained and stored for possible future use for serological comparison with a later or "convalescent" specimen.

The usual course of mumps meningoencephalitis is self limited and so benign as seldom to indicate hospitalization. Since the findings in the spinal fluid may be of much importance in establishing the diagnosis, it is probable that many patients will require hospitalization for the performance of a lumbar puncture and a short period of observation.

Permanent sequelae following mumps meningoencephalitis would seem to be a rare occurrence. Oldfelt[19] in a follow-up study of 75 such cases found mild sequelae in 20 per cent. These consisted of dizziness of vestibular type, recurrent headaches, deafness, and one instance of epilepsy. Laurence and McGavin[14] in a follow-up of 235 cases found mild sequelae in eight cases (3.4 per cent). These consisted principally of recurrent headache and, in one case, facial nerve paresis. In the present investigation, although long term follow-up was not done, there were no sequelae noted at the time of discharge from the hospital.

Death due to mumps meningoencephalitis would seem to be an extremely rare event. A review of the

literature reveals remarkably few cases in which death can be safely interpreted as due to this disease. Acker[1] in reviewing the literature up to 1913 collected reports of eight cases, in most of which death could have been due to bacterial meningitis—in the light of present knowledge. He reported a single case of death clearly due to mumps meningoencephalitis. Donohue[5] in a review of the literature came to similar conclusions and reported a single fatal case of mumps meningoencephalitis accompanying parotitis. He described the fundamental pathological picture to be a perivascular demyelinization process. Including the fatal case herein reported, there are three cases of death due to mumps meningoencephalitis in the recorded literature. It is obvious that many other fatal cases may have occurred without a formal published report. However, on the basis of present knowledge, this disease is very rarely fatal.

The possible role of previous trauma in the fatal case reported here is of some interest. While it seems clear that the brain was damaged by the blow on the head four months before the onset of mumps, the pathological findings did not indicate that this damage contributed to death. It would be of interest to speculate on the role of such trauma, however, in making an otherwise benign viral encephalitis process more severe.

On the basis of the three fatal cases available for study, it would seem that the encephalitis process in mumps meningoencephalitis is similar to that caused by other neurotropic viruses and such pathological findings would not be of specific diagnostic significance.

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The Cardiac Team

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An Introduction to a Symposium on Congenital Heart Disease

IT IS APPROPRIATE that a symposium on congenital heart disease begin with a discussion of "the cardiac team." Great contributions have been made in recent years as a result of the *combined* efforts of many persons working on the problem of cardiovascular disease. The results have been most dramatic in the field of congenital heart disease. It appears that it has been in those institutions and situations where there has been a *team effort* that the contributions have been the greatest.

What is the composition of a cardiac team? The composition of the team on which the authors serve is as follows:

DIAGNOSTICIAN	
INTERNIST	PHYSIOLOGIST
PEDIATRIST	ANATOMIST
RADIOLOGIST	PATHOLOGIST
SURGEON	ANESTHETIST

Of course this may vary from one situation to the next, depending upon the purpose for which the team was organized. The patient's physician should always be the director of the team. Although the advice and help of others is valuable in attaining the goal of optimal health, the patient's physician or diagnostician should not relinquish this responsibility to any board of advisors. The purposes for which the cardiac team here reported upon was formed were:

¶ To assist in the resolution of a clinical problem by: Advising regarding special studies; interpreting results of clinical data; recommending special therapy.

¶ To critically evaluate existing diagnostic and therapeutic procedures.

¶ To suggest and initiate areas of research.

For efficient functioning a cardiac team should meet regularly, preferably once a week, and it should maintain a certain basic composition, using consultants as indicated. Only by meeting frequently can the various members be fully cognizant of each other's special problems, interests and abilities.

Data concerning the patients observed in the pediatric clinic and wards of the University of California at Los Angeles Hospital during the first six months of its operation beginning July 1, 1955, will serve to illustrate the need for a cardiac team. Of a total of 115 patients, 52 in-patients and 63 out-patients, examined by the pediatric cardiologists in that period, 21 per cent were thought to have functional problems and 79 per cent to have organic disease of the heart. Fifty per cent of the total number of patients required special diagnostic studies, either cardiac catheterization or angiocardiography or both, and 29 per cent had surgical treatment. Thirty-three per cent of the out-patients but only 6 per cent of in-patients had functional disease. Some of the out-patients had had special diagnostic studies and operations elsewhere before the opening of the U.C.L.A. Medical Center. A striking fact with regard to in-patients was the high proportion of cases in which special studies were needed (85 per cent) and the high proportion with operable lesions, 44 per cent. The greatest incidence of need for special diagnostic study was in patients less than one year of age, the age bracket in which most of the congenital heart lesions have atypical manifestations. The indications for special diagnostic studies and surgical operation will vary from one clinic or institution to the next and will also vary from one six-month period to the next, depending among other things upon the problems for which resolution is being sought and the type of operations available. Not all groups are interested in resolving the same problems nor are all groups capable at present of performing the same kinds of operations.

The authors have been particularly attracted to the infancy period since, according to postmortem data, 85 per cent of children with congenital heart disease die at less than two years of age, and it has been estimated that 50,000 infants are born each year with malformations that could be corrected in some 30 to 50 per cent of cases by present methods.

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Selective Angiocardiography in Congenital Heart Disease

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• **Angiocardiography has come to be a highly specialized procedure and there are definite indications for doing it. In specific cases it offers clear-cut advantages.**

Technical improvements permit a single injection of a small amount of contrast substance.

Selective angiocardiography is advised where the particular detail of a certain region in the heart is desired.

THERE ARE FEWER indications for angiocardiography today than was anticipated in the years before general use of this procedure had become an actuality. Many communications still make note of the limitations of the method and of the risk associated with it. Therefore, it is only in cases of real necessity that the procedure is carried out. As with other procedures entailing hazards of morbidity or mortality, the possible harm must be weighed against the benefits to be gained. Serious progressive heart disease with the exact diagnosis not known and the final issue in doubt presents a situation for such a decision. If a defect is suspected, information confirming the clinical diagnosis and providing anatomical orientation is important, for a surgeon then can use new surgical techniques with more confidence and better chance of benefit to the patient. The site and extent of defects, particularly of stenosis; the size, number, and location of septal defects; whether or not there is overriding of the aorta; and distinction of overriding aorta from high septal defects—all these can be fairly precisely determined by angiographic studies.

In general, techniques of angiocardiography as described by Robb and Steinberg in 1937 have not been greatly changed since then. Variations in the types of film changer, cassette changer, injector and other mechanical devices have made the results more predictable but have not made the procedure simpler. The authors have used the conventional venous angiocardiography in less than one-fifth of the cases studied. Selective angiocardiography, first described by Chavez in 1947, has proved better.

Since nearly all persons undergoing angiocardiography as a preliminary to operation must have cardiac catheterization as well, the authors have made catheterization an integral part of preoperative study. It is carried out essentially as described by Cournand in 1941. A local anesthetic is used at the point at which the vessel is opened for insertion of the catheter, and a basal anesthetic is added for children. After adequate data on the blood at various positions have been obtained and injection of opaque material is to be done, the tip of the catheter is placed near the structure about which information is desired. In most instances it is left in the apex or midportion of the right ventricle. A single high-speed injection of the opaque material selected (usually 70 per cent Urokon®) quickly fills the area around the catheter tip and usually promptly fills the pulmonary vessels and the entire ventricle, outlining the apertures within the ventricle. The quantity of material injected varies with the size of the patient and the size of the chamber which is to be filled. The speed of the injection varies with the quantity which must be injected, the size of the catheter, and the pressure placed upon it. A mechanical injector of the Gidlund type gives an injection rate which can fill a chamber within a half second. In general, it is desirable to complete the injection in less than two seconds. Such speed is necessary particularly in the demonstration of interatrial septal defects. It is not quite so important if the pulse rate is slow and the ventricular outlets are the subjects of study. In most cases the authors use an injection pressure of 3 kg. per cm.^{2},* but experimentally have used up to 10 kg. per cm.^{2} of pressure without manifest changes in intracardiac pressure or in the pulse rate or heart action where the quantities used were not greater than the volume of the heart chamber into which the material was injected. Using high density material in as small a quantity as can reasonably serve permits study of both ends of the opacified blood column as it moves to the various chambers of the heart.

There has been much comment recently about the relative merits of high-speed film changing and

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*3 kg. per square centimeter of area of cross-section of the lumen of the catheter.

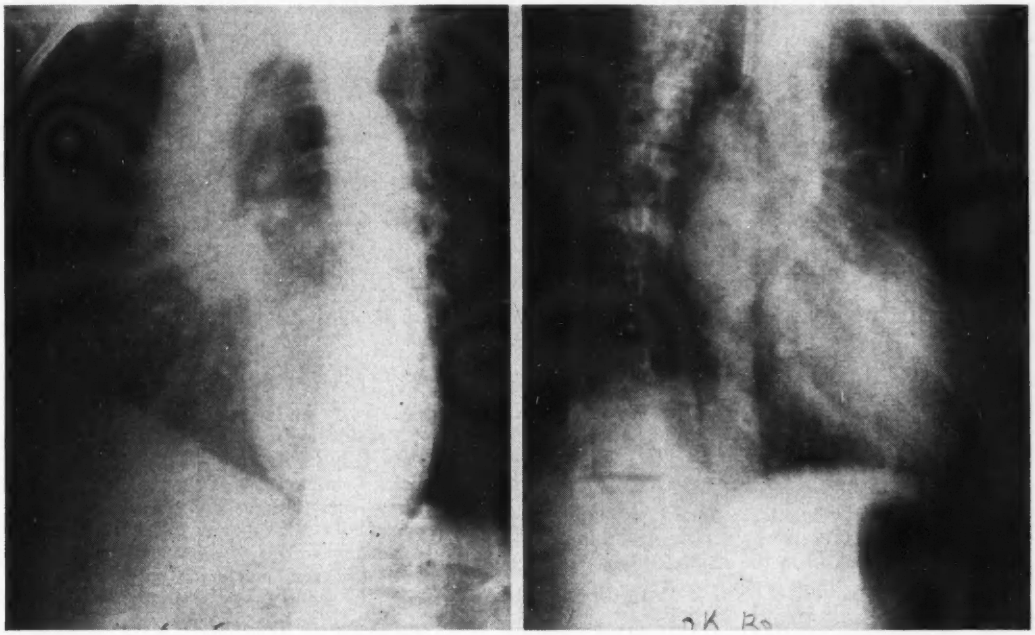

Figure 1 (Case 1).—Coarctation of the aorta. ***Left:*** **The aortic arch is seen in the left anterior oblique projection following injection of 40 cc. of 70 per cent Urokon into the superior vena cava. The length of the coarctation is seen here and in the simultaneous right anterior oblique projection** ***on the right.***

high-speed radiographic exposures. Each appears to have great advantage in certain circumstances, and both should be used in so far as possible. The shorter the exposure, of course, the better the detail obtained. The same is not necessarily true with regard to high speed changing of film or of cassettes, but it seems quite evident that since no one can know exactly when unusual events will take place within the heart, it is best to take many films in the hope of visualizing significant or characteristic changes. Thus cardiac functions are monitored not only by the roentgenograms obtained, but also by simultaneous electrocardiographic and respiratory curves on paper and on the oscilloscope in the room where the examination is taking place. As performed in the laboratory in which the authors work, selective angiocardiography is a highly cooperative procedure involving the synchronized efforts of nurse, technicians, anesthesiologists, cardiologists and radiologists. With this cooperative effort the accuracy of diagnosis has been better than 90 per cent and the incidence of complications slight. Transient arrhythmia, which was noted in about 30 per cent of the patients studied, was associated with the position of the catheter and the amount and type of medium injected. About one-fifth of the patients vomited. Nausea and vomiting are believed to have been contributory factors in the one case in which death occurred.

For purposes of illustration it might be well to report a case in which the angiocardiogram was normal. However there was no such case in the series of patients studied. The closest approximation was the following:

Case 1. The patient was a 27-year-old, white male postal clerk who had been a mail carrier until he switched to his present job because of fatigue. He weighed approximately 160 pounds. The blood pressure was 170/90 mm. of mercury in the right arm and 150/86 mm. in the left. In the lower extremities the systolic pressure was 140 mm. on the right and 124 mm. on the left. The diastolic pressure was over 100 mm. on both sides. Since birth the patient had had a systolic murmur over the precordium and down the back. No popliteal or femoral pulse was obtainable. A diagnosis of coarctation of the aorta had been made. The heart was slightly large. Angiocardiography was performed with a catheter in the superior vena cava. Forty cubic centimeters of 70 per cent Urokon was injected, and the films were exposed at a rate of 2 per second for 12 seconds. The right atrium filled promptly and well. Our first film disclosed the opaque bolus passing through the right ventricle into the pulmonary artery. A second film showed the initial filling of the left atrium and of the left ventricle. The third (Figure 1) delineated the aorta quite nicely, with the coarctation sharply delimited. It was noted that the constricted segment was short and that the obstruction was incomplete. No extensive collateral vessels were seen. The ana-

tomical situation of the various chambers and valves was quite normal. The dilution and mixing of the blood as it passed through the lungs was fairly limited. The contribution of the cavae, however, and the mixing in the ventricle necessitated the use of a larger amount of the opaque media than might otherwise be necessary.

Good delineation is also obtained in the left side of the heart by direct injection into the pulmonary artery.

CASE 2. An 11-month-old white girl weighing 8.4 kilograms had had heart failure several times since a severe episode of vomiting and anorexia at the age of three months. She had never been cyanotic or dyspneic. The heart was very large, and the enlargement was preponderantly left ventricular. A tentative diagnosis of fibroelastosis was made, but it was felt that an anomalous coronary artery orifice, with or without an interventricular defect, could cause the same general symptoms. Upon catheterization of the heart, normal data were obtained. Since the chief interest was in the left side of the heart and since the foramen ovale was not entered, the catheter was placed in the main pulmonary artery and 10 cc. of 70 per cent Urokon was injected at a pressure of 2 kg. per cm. squared.* Exposures in two planes at the rate of six per second for one second were obtained. Exposure number 4 demonstrated the filling of the pulmonary artery. Exposure number 5, one ventricular systolic contraction later, showed the washing out of the pulmonary artery by the unopacified blood from the right ventricle.

During the pulmonary phase of the circulation, two exposures per second for three seconds were obtained. Then during the left heart circulation, six exposures per second for two seconds were studied. Film number ten showed the filling of the left atrium and of the pulmonary veins. The mitral valve was visualized. One atrial contraction later, in atrial systole, the atrial shadow was smaller. The valve was no longer visualized, and the opacified bolus was passing into the left ventricle. The twenty-second exposure of this series again showed the atrium in diastole with sharp delimitation in the region of the mitral valve. The left atrial appendage was well filled and appeared to be much narrower than is usually noted. The left ventricle (Figure 2, *left*) was again seen to be large and had not changed in size and shape since the previous study. Exposure number 24 (Figure 2, *right*) again demonstrated the identical situation in the left ventricle—the atrium in systole, the mitral valve open and the atrium contracted. It appeared as if the opacified blood was being forced through the immobile left ventricle by this very active left atrium. The diagnosis was endocardial fibroelastosis.

An even clearer delineation of the left-sided structures may be obtained with a direct injection into the left side of the heart. This can be done either through a patent foramen ovale, through a septal defect, or by direct percutaneous puncture with a long needle after the manner of Bjork.

*See footnote on page 162.

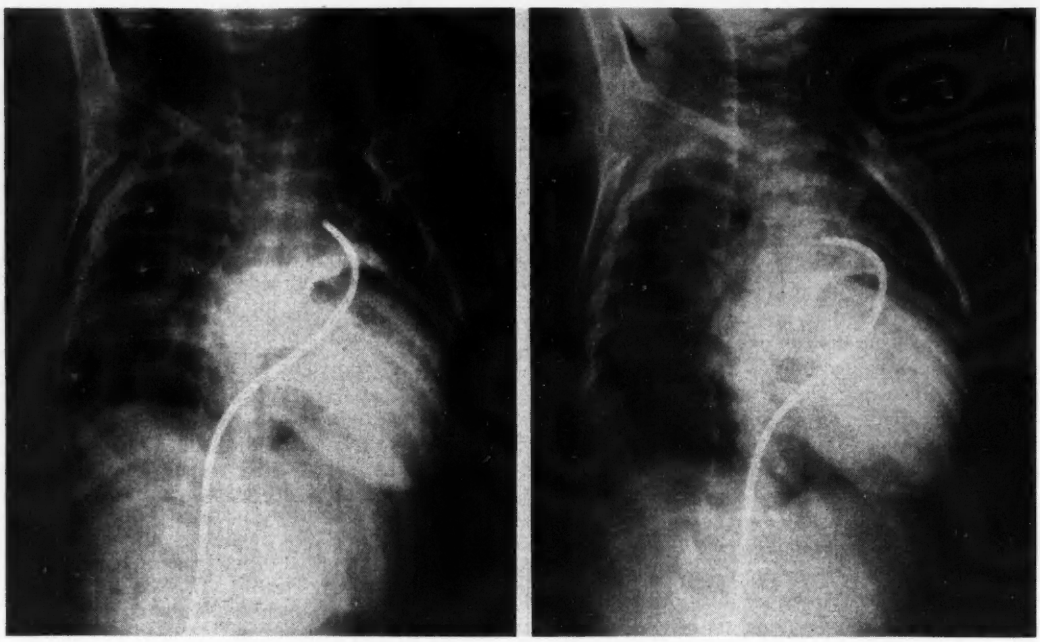

Figure 2 (Case 2).—Endocardial fibroelastosis. *Left:* The mitral valve is closed, the left atrium is filling. *Right:* Atrial contraction has filled the left ventricle, which has not itself changed in size.

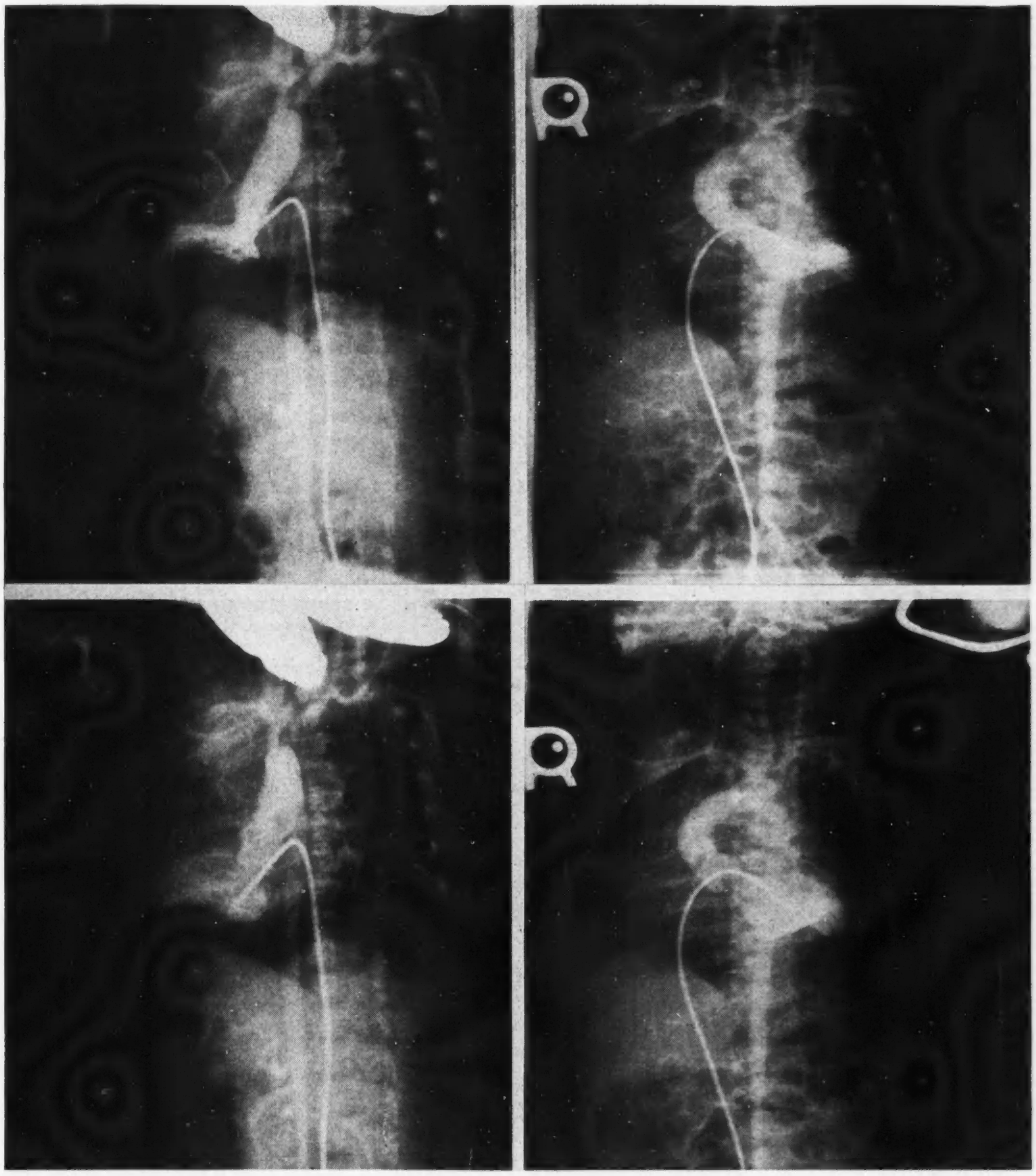

Figure 3 (Case 3).—Ebstein's anomaly with open foramen ovale. Simultaneous antero-posterior and lateral studies with catheter in the left ventricle. *Upper row:* Ventricular systole. *Lower row:* Ventricular diastole. Note the associated anomalies of the coronary arteries and of the subclavian-carotid complex.

CASE 3. The patient, a white girl four months of age, weighing six kilograms, had been cyanotic since birth. She was dyspneic and had frequent respiratory tract infections. She had had a cold three days before admittance, and one ear was reddened. The diagnosis at the time of admittance was "transposition of the great vessels." In conventional x-ray films the right atrium and right ventricle were noted to be quite large. Cardiac catheterization revealed a generally low oxygenation, and the catheterization impression was that the patient had pulmonic stenosis and an interatrial septal defect. The catheter was left in what was thought to be the right ventricle. Ten cubic centimeters of 70 per cent Urokon was injected under pressure of 1.5 kg. per cm. squared,* and the exposures were made at six films per second in two planes. Eight ven-

*See footnote on page 162.

tricular ectopic beats occurred immediately after the injection, but the rhythm soon returned to normal. The child was returned to the ward apparently unaffected by the examination. Film No. 9 showed the position of the catheter quite different from its site at the time of the insertion. Apparently in moving the child the catheter had been passed through the foramen ovale into the left atrium near its mitral orifice. This exposure was with the heart in diastole; the aortic valves were closed, the aorta had already been filled and its anomalous branches were observed arising from the arch. No innominate artery was present, and the left subclavian arose from the descending aorta as did the right subclavian, the latter crossing behind the esophagus. The coronary artery was noted to be also anomalous, a single large trunk ascending from the sinus and branching into its three components. There was great difference between the diameter of this coronary artery in diastole and the diameter in systole (Figure 3). The patient died the following day, apparently of respiratory failure. At autopsy the right atrium and right ventricle were huge. The foramen ovale was patent; the tricuspid valve was anomalous. Medial cusps were absent. The anterior and inferior leaflets of the valve formed a membrane from the tricuspid ring to the anterior and lateral wall of the ventricle. A separate blind pouch was present with papillary muscles attached to both sides of this membrane. In effect, then, there was a single chamber on the right side. The ductus was closed. Aspirated food and milk was present in the tracheal bronchial tree.

CASE 4. The patient, a five-year-old white boy, had been intermittently cyanotic since the age of six weeks. There was a history of squatting. A harsh systolic murmur with a thrill in the third interspace on the left was noted. A clinical diagnosis of infundibular stenosis was made, based chiefly on the cardiac configuration. Cardiac catheterization revealed evidence of both a right-to-left and left-to-right shunt as well as of right ventricular hypertension. The catheter could not be passed into the pulmonary artery and was left in the midportion of the right ventricle for subsequent angiocardiography. Although the patient weighed 17 kilograms, only 10 cc. of the opaque medium was injected. Exposures were made at a rate of 6 per second for three seconds and then 2 per second for six seconds in two planes. Before the first second (Figure 4) the injection revealed good filling of the right ventricle with enlargement of the crista supraventricularis and infundibular stenosis. A jet of opacified blood passed into the left ventricle. In ventricular diastole (Figure 5) this returned to the right ventricle with a jet of unopacified blood, and the infundibular chamber retained a moderate amount of the trapped opaque material. The pulmonary tree was well outlined and the valves beautifully demonstrated. The diagnosis was tetralogy of Fallot.

CASE 5. The patient, a boy 20 months of age, had had numerous episodes of heart failure since the age of five months and had had many upper respiratory tract infections. Interventricular defect was considered, and cardiac catheterization was

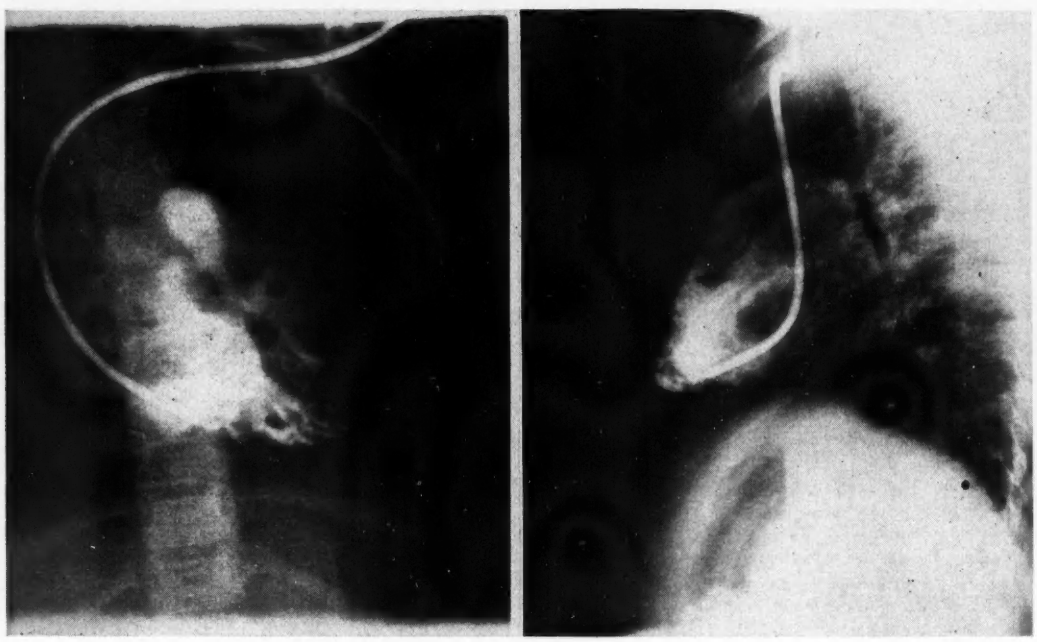

Figure 4 (Case 4).—Tetralogy of Fallot. Simultaneous exposures—large ventricular wall defect shown by transient reversal of shunt; catheter in right ventricle, pulmonic valves open.

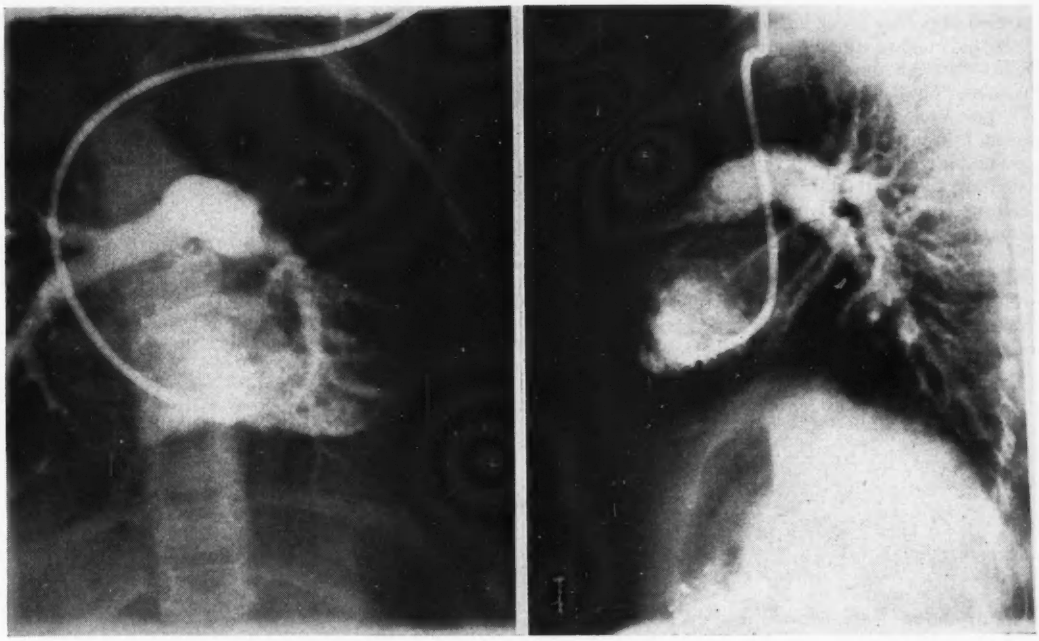

Figure 5 (Case 4).—Tetralogy of Fallot. Simultaneous exposures—pulmonary valves closed, one-tenth second later than Figure 4. Note the constant narrowing of the infundibulum of the right ventricle.

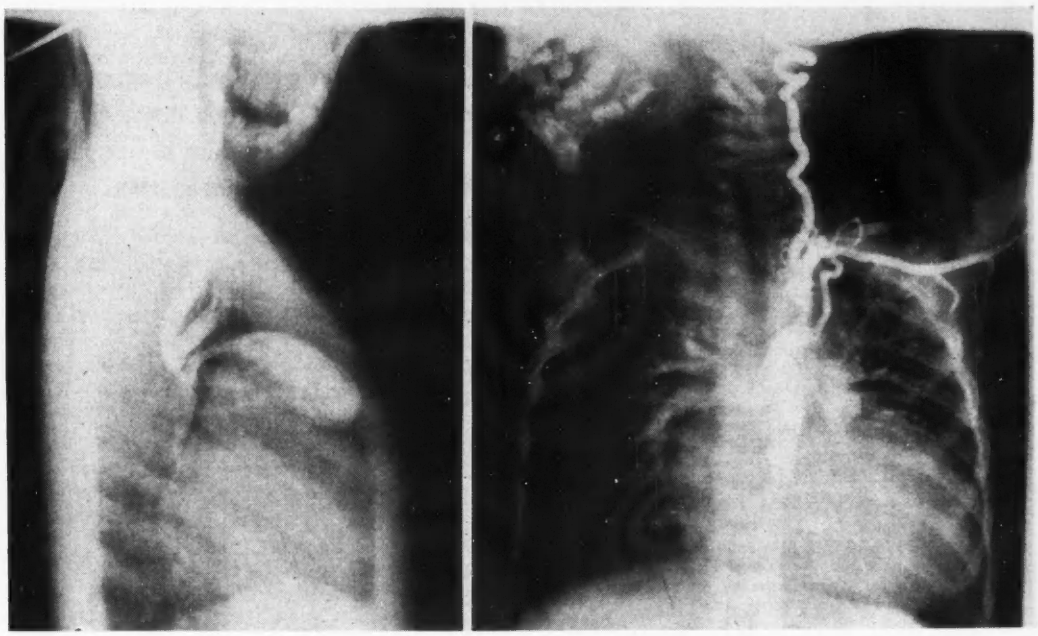

Figure 6 (Case 5).—Patent ductus arteriosus with coarctation of the aorta. *Left:* The aortic constriction is seen in the lateral projection at the attachment of the patent ductus arteriosus. Note the large pulmonary artery and its competent valves. *Right:* One-tenth second later the branch pulmonary arteries are well filled and the aortic collaterals are appearing.

carried out. This procedure demonstrated the probability of patent ductus arteriosus, possibly with reflux through the pulmonic valve into the pulmonary outflow tract. For angiocardiography, 8 cc. of 35 per cent Diodrast® was injected thereupon through a catheter in the left subclavian artery. At one-half second (Figure 6, *left*) the exposure showed not only the coarctation and the patent ductus arteriosus but also clearly demonstrated the distended pulmonary artery with its large competent valves. One-tenth of a second later (Figure 6, *right*) the pulmonary arteries extending out into the lung fields were well demonstrated and their relationship to the ductus arteriosus and the coarcted aorta was shown. Film No. 14, two seconds after the injection began, disclosed the retrograde flow of opacified blood from the internal mammary artery back to the distal portions of the aorta.* (It is tortuous vessels such as these that give rise to the intercostal pulse and the rib erosions which have become classical signs of coarctation of the aorta.)

U.C.L.A. School of Medicine, Los Angeles 24 (O'Loughlin).

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*For details of operation in this case, see paper by Maloney and Flynn on page 173 of this issue of CALIFORNIA MEDICINE.

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As your personal physician I consider it both a privilege and a matter of duty to be available in case of an emergency. Consequently, I thought it would be a good precaution if—on this gummed paper which can be pasted in your telephone book or medicine cabinet—I listed the numbers where I can be reached at all times. They are:

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Retrograde Brachial Aortography

Its Use in the Diagnosis of Patent Ductus Arteriosus and Coarctation Of the Aorta in Infancy

HERBERT L. ABRAMS, *M.D.*, and SAUL J. ROBINSON, *M.D.*, San Francisco

• **Patent ductus arteriosus and coarctation of the aorta are among the commonest causes of congestive heart failure early in life. When medical therapy fails to control heart failure in these cases, surgical division of the ductus or excision of the coarcted segment can be performed. But the recognition of these anomalies in infancy is more difficult than in childhood or adult life.**

Retrograde thoracic aortography is a technique which permits positive identification. In the presence of patent ductus arteriosus, opacification of the pulmonary arteries from the descending aorta will be clearly shown; if coarctation is present, its position, severity, and the length of the involved segment can usually be demonstrated. Properly employed, retrograde brachial aortography is a relatively safe and effective diagnostic procedure.

PATENT DUCTUS ARTERIOSUS and coarctation of the aorta are among the commonest causes of congestive heart failure in early life.[2-4,6,8] When intractable under medical management, both are amenable to surgical treatment. With modern methods both are diagnosable, yet occasionally are not recognized in time.

In infancy, the ordinary clinical and roentgenologic signs may not suffice for exact diagnosis. Patent ductus arteriosus may exist without the classical "machinery" murmur, and may be difficult to differentiate from intracardiac left-to-right shunts. The diagnosis of coarctation of the aorta, usually clear-cut in adults on clinical grounds alone, is less certain in infants, in whom blood pressure measurements may be difficult to obtain. Even when the diagnosis can be made, the length and position of the stenotic segment may affect the feasibility of operation.

Retrograde brachial aortography is an efficient diagnostic technique in such infants.

Technique

The left brachial artery is cannulated (Figure 1) and the opaque medium is injected counter-current toward the aorta. Serial roentgenograms record the passage of the opaque medium into the aortic arch and its branches (see Figure 1). (Details of premedication, anesthesia and electrocardiographic recordings, were described in a previous communication.)

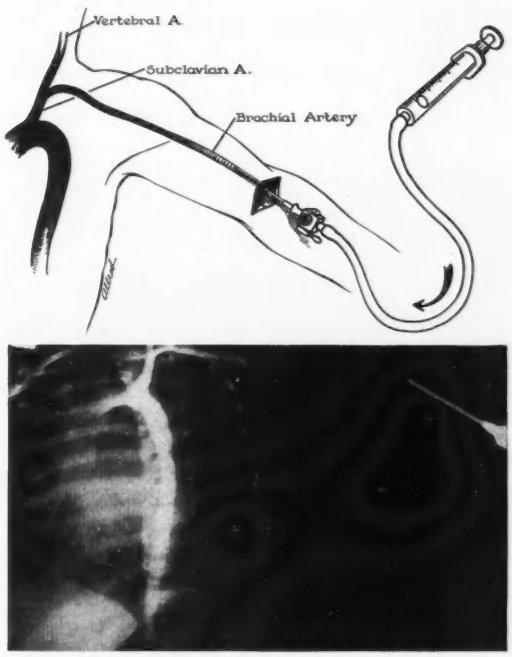

Figure 1.—Technique of retrograde brachial aortography. *Upper:* The largest possible Robb needle is inserted in the brachial artery and attached to a three way stop-cock. A short length of flexible rubber tubing is attached to the stop-cock at one end, and the filled syringe at the other. *Lower:* Roentgenogram following injection. The needle is in the left brachial artery, and the injection has just been completed. The brachial, axillary and subclavian arteries are opacified, as is the arch of the aorta and the descending thoracic aorta.

Material

Retrograde aortograms were performed in 84 patients, 67 of them less than three years old, 50 less than 12 months, and 32 less than six months. Thirty-five per cent Diodrast® was injected into the brachial artery in 77 cases, and a 70 per cent to 75

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TABLE 1.—*Findings in 84 Retrograde Thoracic Aortograms*

Diagnosis	No. of Cases
Patent ductus arteriosus	14
Coarctation of the aorta	15
Total interruption of aortic arch	1
Right aortic arch with retroesophageal aortic diverticulum	1
Right aortic arch	1
Reverse patent ductus arteriosus*	2
Normal	44
Unsatisfactory	6
Total	84

*Angiocardiograms were required to demonstrate reversal of flow. In an additional two cases in which coarctation of the aorta was present, reversal of flow through a patent ductus arteriosus was also demonstrated.

per cent concentration of the opaque medium into the carotid or brachial artery in seven cases. The indication for the procedure in most cases was persistent congestive heart failure, frequently associated with recurring pulmonary infection. The primary effort was to ascertain whether patent ductus arteriosus or coarctation of the aorta was present.

Results (Table 1)

In 14 cases, the presence of patent ductus arteriosus with left-to-right shunt was shown either by demonstration of the ductus itself (Figure 2) or by indirect evidence—immediate opacification of the pulmonary arteries from the descending limb of the aortic arch (Figure 3). Within two to three seconds after injection, left atrial, left ventricular and subsequent aortic opacification were observed. Eleven of the 14 patients were below the age of one year. In all instances but one, the diagnosis was proved at operation.

The presence of coarctation of the aorta was demonstrated in 15 patients. In most instances the site of coarctation was distal to the origin of the left subclavian artery, and the zone of constriction was localized (Figures 4 and 5). In ten cases the diagnosis was proved at operation and in two at necropsy. Ten of the 15 patients were below the age of one year.

In one case, complete interruption of the aortic arch, associated with reversed flow through the ductus arteriosus was shown. In another case, a retroesophageal aortic diverticulum was opacified.

Forty-four studies were normal, and six examinations were unsatisfactory.

There were three errors in diagnosis, all of them included in the six cases in which the studies were unsatisfactory. In one, the diagnosis of patent ductus arteriosus was suggested and proved wrong; in another, the result of examination was interpreted as negative for ductus and a ductus was subsequently proved to be present; and in the third case it was stated that there was "suggestive but incon-

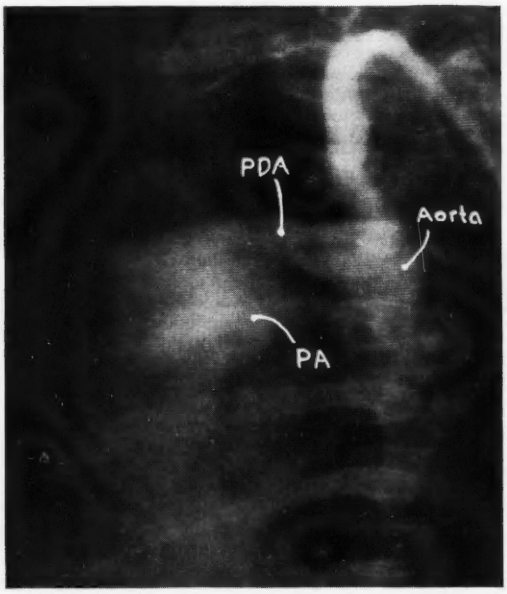

Figure 2.—Patent ductus arteriosus in a seven-month-old girl. Retrograde brachial aortogram. The opaque medium has reached the aorta from the subclavian artery, and clearly delineates the ductus arteriosus (PDA). The pulmonary artery (PA) is opacified because of the left to right shunt through the ductus.

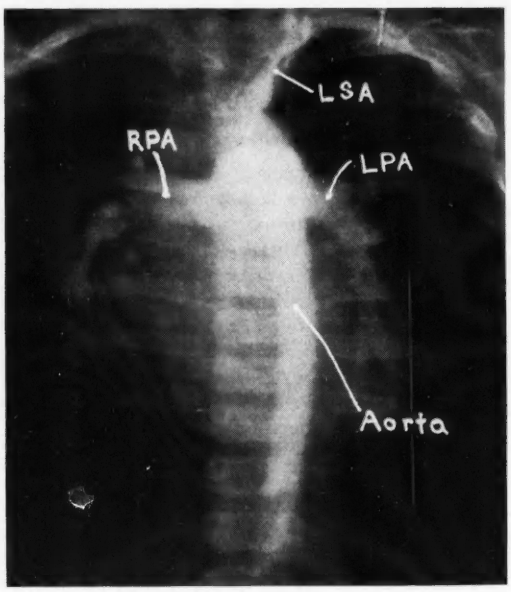

Figure 3.—Patent ductus arteriosus in an eight-month-old girl. Retrograde brachial aortogram demonstrates sequential opacification of the left subclavian artery (LSA), the aorta, and the right (RPA) and left (LPA) main pulmonary arteries, proving the existence of an aortic pulmonary communication. That this is a patent ductus arteriosus rather than an aortic septal defect may be inferred from the fact that the ascending aorta is not opacified.

clusive" evidence of a patent ductus arteriosus and no ductus was found at operation. All three of these studies would now be considered unsatisfactory and a repeat examination would be done.

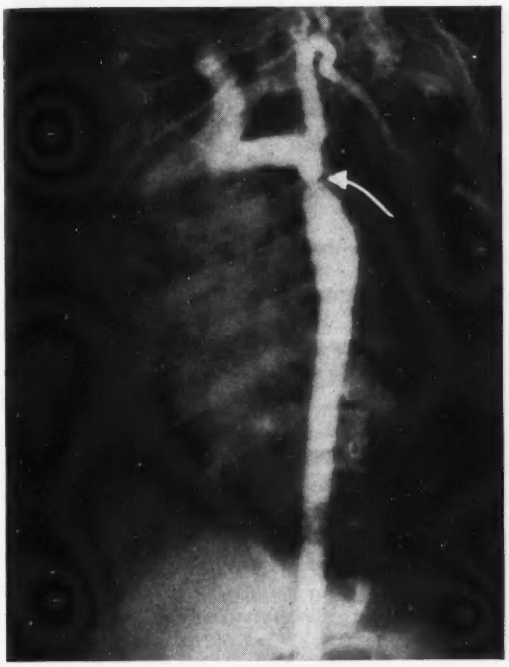

Figure 4.—Coarctation of the aorta in a three-month-old boy. Retrograde brachial aortogram. The classical "adult" (localized) type of coarctation is visible. The ascending aorta is somewhat dilated, in contrast to the transverse portion of the arch and the isthmus. Note the large tortuous parascapular artery. The internal mammary arteries are also prominent.

TABLE 2.—*Reactions Following Retrograde Aortography with 35 Per Cent Diodrast in 77 Cases*

Reactions	No. of Patients
Irregular, labored, or rapid respirations	8
Vomiting (all patients had general anesthesia)	6
Slight tremor	1
Disparity in pupil size	1
*Electrocardiographic changes:	
T-wave changes	4
Ventricular premature beats	2
Nodal rhythm	1
Tachycardia	3

*Electrocardiograms were obtained in only 35 of the cases.

Reactions

Among the 75 cases in which retrograde aortograms were performed, using brachial injection of 35 per cent Diodrast as the medium, the incidence of significant reactions was not high and there were no deaths (Table 2).

In seven instances retrograde brachial carotid injection with a 70 per cent to 75 per cent concentration of opaque medium was employed. Reactions in these cases are listed in Table 3.

Most of the deaths reported in the literature followed the use of a 70 per cent medium or injection into the carotid artery.[5,7,9] Since a 30 to 35 per cent concentration of opaque medium is adequate for demonstrating the aorta in infancy, no higher concentration need be employed.

Figure 5.—Coarctation of the aorta in a two-month-old infant. Retrograde brachial aortogram demonstrates a localized zone of stenosis (arrow) at the termination of the isthmus of the aortic arch. Beyond this area of narrowing, a distinct poststenotic dilatation involving a segment about 1.5 cm. is visible.

TABLE 3.—*Reactions Following Retrograde Aortography in Which a 70 Per Cent Concentration of Medium Was Used in Seven Cases*

Patient No.	Medium	Concentration	Site of Injection	Reaction
1	Urokon	70 per cent	Brachial artery	Death
2	Diodrast	70 per cent	Carotid artery	Laryngospasm
3	Diodrast	70 per cent	Carotid artery	Hemiplegia
4	Neo-Iopax	75 per cent	Carotid artery	Severe neck pain
5-7	Diodrast	70 per cent	Carotid artery	None

DISCUSSION

All the patients with patent ductus arteriosus had an excellent response to closure of the ductus. Most of the patients with coarctation were relieved of heart failure and of significant disability. Since special diagnostic procedures were employed only on patients who were severely ill, operation was not without hazard; but the prognosis with medical management seemed grave.

The diagnosis of patent ductus arteriosus may be made in infancy by cardiac catheterization. If the pulmonary artery is not catheterized, the diagnosis cannot definitely be established. Furthermore, even if the pulmonary artery is catheterized, the distinction of patent ductus arteriosus from ventricular septal defect is not always possible unless the ductus itself is entered. In the largest published series of catheterizations in infancy, failure to enter the pulmonary artery was relatively common in patients under the age of 12 months.[11] Hence the authors have relied on aortography in infancy and have reserved cardiac catheterization for older age groups. Obviously, the main objective is to establish the diagnosis of an operable anomaly, and to this end both techniques may be effectively utilized.

The hazards of retrograde aortography have frequently been stressed. The authors' experience with the retrograde brachial infection of 35 per cent Diodrast has been fortunate, but not unique.[8] A survey is under way to determine the hazards of retrograde aortography as employed at a large number of institutions. Preliminary analysis suggests that the complications of retrograde aortography have usually been most striking when high concentrations of the opaque media have been injected into the carotid artery.

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Surgical Treatment of Congenital Heart Disease

The Evaluation of Diagnostic Data

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• **In the diagnosis of congenital heart disease, the cardiologist was formerly concerned with distinguishing the operable from the inoperable cases. With the development of "open" heart operations under hypothermia and extracorporeal circulation, the majority of congenital heart lesions have become correctable. It is now necessary to make an exact anatomic diagnosis preoperatively. The present discussion reviews the diagnostic methods employed by the cardiac team in investigating a patient with congenital heart disease.**

THE TASK OF THE CARDIOLOGIST in diagnosing congenital heart disease was, until recently, a relatively simple one. It consisted of separating those cases for which a satisfactory operation had been developed from other cases for which no known treatment was available. The perfection of the technique of "open" heart operations—that is, operations in which the surgical field is exposed to vision—with the aid of hypothermia or pump-oxygenators makes imperative the specific diagnosis of all congenital heart lesions, since most can be satisfactorily treated by surgical methods now available. The purpose of the present discussion is to emphasize the surgeon's need of an accurate preoperative diagnosis, since his surgical approach is determined by the nature and location of the congenital lesion.

Five years ago, it was of academic interest to differentiate a functional cardiac murmur from one due to atrial or ventricular septal defects, for the course of action to be followed in either case was the same. Now, however, approximately 70 per cent of patients with congenital heart disease can benefit from operation and the physician therefore has an increased obligation to arrive at an accurate diagnosis. It is desirable that the nature of the lesion be determined at an early age, since in some patients, particularly those with increased pulmonary flow, severe pulmonary hypertension may develop if the disease is allowed to progress, and operation then could not be done.

The diagnostic problem from the surgeon's point of view has become more complex. In former years it was only necesary for him to know whether the operation would best be performed through the right or left hemithorax. In general, this could be determined by the nature of the diagnosis and by study of the structure of the great vessels. Newly developed surgical techniques give surgeons a choice between shunting operations and direct operation on the cardiac lesion; between "closed" operation (the surgeon operating within the heart on structures not exposed to view) and "open" operation (under direct vision); between open operation under hypothermia (with the circulation obstructed after the body temperature is lowered) and open operation with the pump-oxygenator (with the heart totally by-passed). Use of these new methods of open heart operation requires hours or days of preoperative preparation. It is not sufficient that the surgeon arrive at a diagnosis at the time of operation, since, for example, the discovery of a ventricular defect at the time of operation would require reoperation when a pump-oxygenator could be prepared for use.

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DIAGNOSTIC METHODS

Many cases of congenital heart disease are satisfactorily diagnosed simply on the basis of information ordinarily available—history, physical examination and radiologic and electrocardiographic data. The more difficult diagnostic problems may require study by special tests such as cardiac catheterization and angiocardiography. A brief review of the various diagnostic aids is pertinent.

History

In addition to the usual signs and symptoms of cardiac disease—retarded development, cyanosis, syncopal attacks and dyspnea—there may be other indications pointing to a specific diagnosis. Repeated respiratory tract infection suggests the presence of increased pulmonary blood flow due to a left-to-right shunt within the ventricles or between the great vessels. A shunt in the opposite direction

(right-to-left) is often associated with a history of cyanosis after slight exertion. If the patient squats in a characteristic fashion after exercise, the presence of pulmonic stenosis, in addition to the right-to-left shunt, is probable. Hemoptysis suggests pulmonary hypertension and may occur with either elevation of the pulmonary venous pressure or pulmonary arterial pressure. Dyspnea on slight exertion in a noncyanotic child should make the physician suspect isolated valvular pulmonic stenosis.

Physical Examination

Physical examination of the patient in some diseases, such as patent ductus arteriosus and coarctation, may be sufficient to establish the diagnosis. However, the results of physical examination are more often confirmatory in nature and must be used in conjunction with other clinical and special tests. A bulge in the left anterior wall of the chest in a noncyanotic child may indicate right ventricular hypertrophy and often gives the first evidence of a left-to-right shunt. The timing and the location of thrills and murmurs give important information. Exaggeration of the intensity of the pulmonary second sound and mitral first sound frequently results from pulmonary hypertension and elevated pulmonary venous pressure respectively, although such observations must often be confirmed by direct measurements. Inequality of peripheral pulses may result from anomalies of the aortic arch or from coarctation. The presence of cyanosis and clubbing of the extremities is of interest but permits a specific diagnosis only in cases in which it is present in the lower extremities and absent in the upper (*i.e.*, patent ductus arteriosus with a reversed shunt).

Growth is retarded in the majority of patients with tetralogy of Fallot, ventricular septal defect, patent ductus arteriosus or transposition of the great vessels. Physical development is retarded in the minority of patients having tricuspid atresia and atrial septal defect. It is generally normal in coarctation, isolated valvular pulmonic stenosis and congenital aortic and subaortic stenosis. Impairment of development, however, is more often correlated with the degree of intracardiac shunt than with the specific diagnosis.[1]

Radiology

Postero-anterior and right and left oblique views of the chest, particularly when done with a barium swallow, are helpful in determining enlargement of cardiac chambers. Stenotic valves can often be identified by the poststenotic dilatation of the artery beyond. Enlargement of the pulmonary artery and congestion of the lung fields indicate increased pulmonary flow and a left-to-right shunt. Fluoroscopic visualization gives a more dynamic picture of cardiac function; abnormal pulsations in the auricles sometimes signify insufficiency of the right or left atrioventricular valves. Since congenital heart lesions are frequently associated with anomalies of the great vessels, careful inspection for such anomalies should be made at the time of fluoroscopic examination. Urgency for surgical treatment is often indicated by progressive cardiac enlargement visible on films taken at intervals over a period of months or years.

Electrocardiography

The determination of electrical axis and right and left ventricular hypertrophy provides helpful ancillary information. Left axis deviation in a cyanotic child is pathognomonic of tricuspid atresia. Rarely, however, is the electrocardiogram of such specific diagnostic aid.

Cardiac Catheterization

The introduction of a catheter into the chambers of the heart by way of the venous system is one of the most helpful of the special diagnostic tests. The information gained frequently leads to a specific diagnosis. Pressure tracings may identify pulmonary hypertension and insufficiency or stenosis of the tricuspid or pulmonary valves. Contamination of the normally desaturated venous blood on the right side of the heart by fully oxygenated blood from the left side makes possible the diagnosis of a left-to-right shunt. Depending on the location of the "step-up" in oxygen saturation, one may make the diagnosis of an atrial or ventricular septal defect or patent ductus arteriosus. Right-to-left shunts may be identified by the presence of arterial desaturation on samples withdrawn from a peripheral artery. Significant information is obtained by passing the catheter directly through a defect in the heart or great vessels. Thus, the diagnosis of atrial or ventricular septal defects or patent ductus arteriosus is established when the catheter enters the left side of the circulation (Table 1).

Angiocardiography

If the nature of the lesion remains in question after the performance of the preceding studies, angiocardiographic examinations may complete the diagnostic study. The introduction of the radiopaque dye into the venous system frequently shows the presence of intracardiac shunts and permits an outline of the anatomic structure of the right and left chambers of the heart. The development of new x-ray machines permits exposure at motion picture speed, thereby giving the physician an opportunity to study the function of the heart valves during the cardiac cycle. (A detailed discussion of this technique is presented in another paper in this symposium—page 162.

TABLE 1.—*Catheterization Data in Common Congenital Heart Defects*

Congenital Defect	Shunts	Pressures (in Mm. of Mercury)			Oxygen Content		
		RA	RV	PA	RA	RV	PA
Normal	.....	5/0	25/0-2	25/8	VC=RA	RA=RV	RV=PA
Patent ductus arteriosus	Left to right	Normal	Normal or Increased	Normal or Increased	Normal	RV=RA or RV>RA	PA>RV
Tetralogy of Fallot	Right to left	Normal	Increased	Decreased	Normal	RV=RA or RV>RA	PA=RV
Auricular septal defect	Left to right	Normal or Increased	Increased	Increased	RA>VC	RV=RA	PA=RV
Ventricular septal defect	Left to right	Normal	Increased	Increased	Normal	RV>RA	PA=RV
Pure pulmonic stenosis	None	Normal	Increased	Decreased	Normal	RV=RA	PA=RV
ASD and VSD	Left to right	Increased	Increased	Increased	RA>VC	RV>RA	PA=RV

Abbreviations:
ASD = Auricular septal defect
VSD = Ventricular septal defect
RA = Right atrium
RV = Right ventricle
PA = Pulmonary artery
VC = Venae cavae

OPEN HEART OPERATIONS—EFFECT ON DIAGNOSIS

In the early days of cardiac operations, many or all of the previously mentioned special studies were performed in each case before operation. Such an extensive work-up sometimes reflected the limitation of the physician's ability to make a clinical diagnosis. Evaluation of patients on clinical criteria during the past eight years reached a sufficient degree of perfection that many of these tests became unnecessary in the average case. During this era the identification of a correctable lesion was adequate indication for operation. The surgeon was little concerned with the presence of additional anomalies, since such associated defects were beyond his ability to correct. Now, however, the development of open heart operations under hypothermia or extracorporeal circulation has increased the necessity of obtaining a complete diagnosis before operation. Multiple defects may now be corrected at a single operation, but it is essential that the surgeon be apprised of all abnormalities before operation so he can select the appropriate method of approach. For example, isolated pulmonic stenosis can be satisfactorily corrected by closed operation through a left thoracotomy. If the valvular stenosis were associated with a large atrial septal defect, the surgeon might elect to repair both lesions by open cardiac operation, with the aid of hypothermia, through a bilateral thoracotomy.

THE CARDIAC TEAM

The complexity of cardiac diagnosis has so increased that rarely is one person capable of understanding completely all aspects of the problem. This has resulted in the development of one of the most helpful adjuncts in the treatment of patients with congenital heart disease—the cardiac team. Following completion of the diagnostic studies in an individual case, a meeting of interested physicians—a pediatric cardiologist, a radiologist, a physiologist and a surgeon—is called. All aspects of the diagnosis, prognosis and treatment are discussed. As the result of these conferences the surgeon is able to select the method of operation which will most benefit the patient.

Despite intensive preoperative investigation, the surgeon is sometimes faced with totally unanticipated problems in the operating room. It has been found valuable to have a consultation of the cardiac team in the operating room when unexpected anomalies are encountered after the chest is opened. By visual inspection and palpation of the heart, the surgeon is often able to obtain additional information. Probes inserted through the ventricular wall may be used to locate septal defects. Exploratory myocardotomy may be performed so that the surgeon may palpate the structure and function of the cardiac valves. Pressure measurements and the withdrawal of blood for oxygen analysis during operation may also be useful. Diagnoses made at operation are of less value than those made preoperatively, since the surgeon may be unprepared to perform an open heart operation requiring the use of hypothermia or of a pump-oxygenator.

ILLUSTRATIVE CASE

The following report of a case illustrates the use of clinical and special tests for arriving at a correct diagnosis in a patient with multiple cardiovascular defects.

A 21-month-old white boy was admitted to the hospital for diagnostic study. Cardiomegaly and a murmur were first noted at the age of two months. During the first six months of life the child had

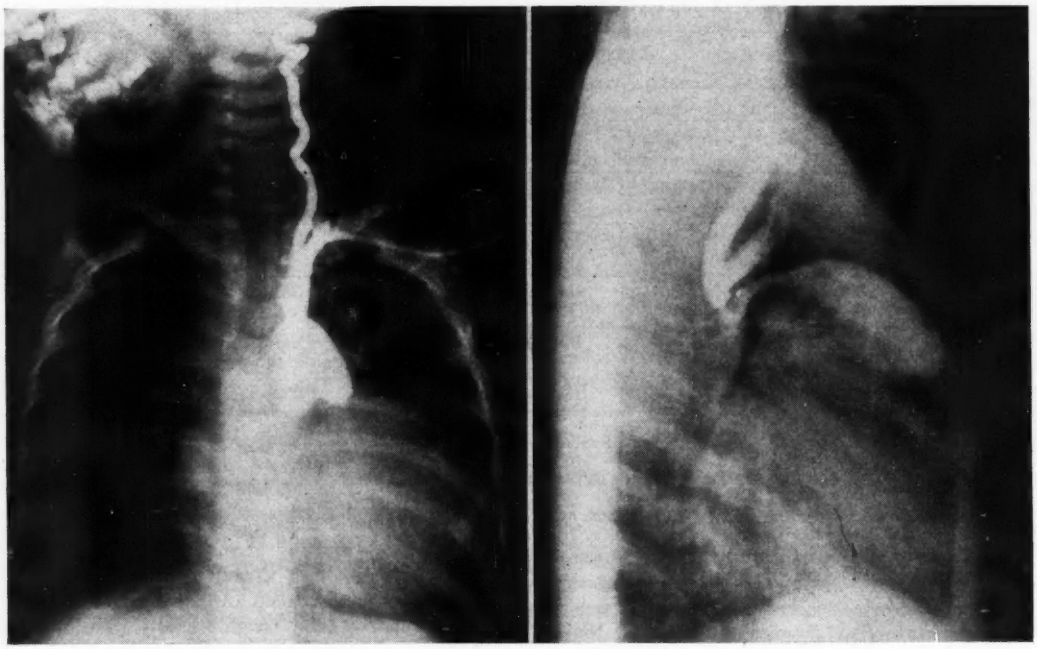

Figure 1.—Retrograde aortogram. Note catheter in left subclavian artery with dye filling the descending aorta and refluxing through the patent ductus into the pulmonary artery and demonstrating the competency of the closed pulmonic valves.

three episodes of cardiac failure treated by hospitalization and digitalization. There was a history of frequent upper respiratory tract infection. Cardiomegaly had been progressive up to the time of admission.

The patient was physically retarded. He was tachypneic at rest and decidedly dyspneic on exertion. There was no cyanosis. The heart was enlarged, and there was a Grade IV systolic murmur, loudest in the third interspace along the left sternal border. This murmur was transmitted posteriorly to the interscapular area. One observer heard a short middiastolic murmur at the apex; another observer noted a continuous murmur at the base. The pulmonary second sound was accentuated. The blood pressure was 160/60 mm. of mercury in the left arm and 80/60 mm. in the left leg. Femoral pulses were faintly palpable.

The difference in blood pressure between the arms and legs made the diagnosis of coarctation a certainty. Coarctation as an isolated defect, however, does not commonly cause heart failure at an early age. The history of repeated respiratory infections and an exaggeration of the pulmonary second sound on physical examination suggested increased pulmonary blood flow indicative of a left-to-right shunt (septal defect or patent ductus arteriosus).

Radiological examination demonstrated right and left ventricular hypertrophy and increased vascularity of the lung fields. An electrocardiogram showed right axis deviation and right ventricular hypertrophy.

The clinical tests were of little diagnostic aid, and it was apparent that cardiac catheterization would be necessary to detect the presence of malformations in addition to the coarctation.

Cardiac catheterization data was as follows:

	Pressure (mm. Mercury)	Oxygen Saturation (Per Cent)
Right atrium (high)	3/0	67
Right atrium (mid)		67
Right atrium (low)		66
Right ventricle (high)	50/4	80
Right ventricle (mid)	54/8	75
Main pulmonary artery	77/60	88
Right pulmonary artery	53/33	80
Aorta, below diaphragm (through a patent ductus)	40/20	95
Left subclavian artery	145/58	92

The catheterization studies confirmed the presence of patent ductus arteriosus by the direct passage of the catheter through the ductus into the aorta. The measurement of intra-arterial pressures, above and below the site of coarctation, further confirmed the diagnosis of coarctation. The "step-up" in oxygen saturation in the right ventricle suggested either of two possibilities: (1) That an interventricular defect was present, or (2) that the pulmonary hypertension caused by the patent ductus resulted in insufficiency of the pulmonary valves

with leakage of saturated blood back into the right ventricle.

Retrograde aortography was carried out by passing a plastic catheter up the left ulnar artery until the tip of the catheter lay just within the aortic lumen. Rapid sequence radiograms were made during injection of the dye. Dye passed from the aorta into the pulmonary artery through the patent ductus. Good filling of the main pulmonary artery demonstrated the pulmonary valves to be competent (Figure 1).

Since the angiogram demonstrated competency of the pulmonary valves, the step-up in oxygen saturation in the right ventricle was considered due to an interventricular defect.

Final diagnosis was, therefore, coarctation with patent ductus arteriosus and interventricular septal defect. Because of the extent of the operation for coarctation, it was elected to close the ductus and repair the coarctation but to leave the repair of the ventricular septal defect for a second operation. The patient has recovered satisfactorily from the first operation.

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Neurology, Neurosurgery and Psychiatry

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• **Neurology, neurosurgery and psychiatry over the past few decades have become more and more segregated in spite of their common foundation in the basic sciences of neuroanatomy, physiology, neurophysiology and neurochemistry. The reasons leading to this unhealthy dichotomy or trichotomy of these specialties dealing with disorders of the nervous system (including behavior) are discussed. Recent advances in the neurobiological sciences are reviewed from the point of view of encouraging and justifying a more healthy integration and working together of these three closely related specialties.**

MAGOUN at the recent meeting of the Medical Advisory Board of Cerebral Palsy in Santa Monica stated in an informal discussion, "We need an approximation of the brain and mind." Clinically, this is to say we need an approximation of neurology, including neurosurgery, and psychiatry.

The artificial dichotomy of neurology and psychiatry has been due mainly to: (1) A lack of knowledge of the more complex functions and interactions of the higher levels of the neuraxis, and (2) a lack of appreciation or failure of application of this appreciation that the nervous system is the only organ of the body whose function, among other functions, is concerned, in the terms of Herrick[5] "with the interaction between the living body and the world about." Neurology rooted to the limited knowledge of the structure and function of the nervous systems, has avoided behavioral and environmental problems of health because: (1) It could not correlate complex human behavior with the limited knowledge of the nervous system, and (2) it failed to appreciate or apply its appreciation that one of the important functions of the nervous system is concerned with the interaction between the living body and the world about. There were neurologists with more social, theoretical and philosophical interests who turned to the problem of unhealthy human behavior. However, for the same reasons the more socially minded and philosophical neurologist, the anlage of the present day psychiatrist, was unable to correlate his interests in human behavior to the then limited knowledge of the complex neuronal systems of the neuraxis.

Therefore, ignorance of the anatomical and physiological understanding of the higher levels of the neuraxis has led to isolationism between neurology, neurosurgery and psychiatry. In recent decades there has resulted a breaking apart of medical societies of neurology and psychiatry whose membership was made up of neurologists, neurosurgeons and psychiatrists into segmented societies of neurology, neurosurgery, or neurology and neurosurgery and psychiatry. A few of the older and broader traditional societies have withstood the isolationist trends—such as the Boston Society of Neurology and Psychiatry, the Northwest Society of Neurology and Psychiatry, and our own Section on Psychiatry and Neurology of the California Medical Association. Today, so far as the author knows, there is in existence only one society on a national or international level which brings together neurologist, neurosurgeon and psychiatrist: It is the Association for Research in Nervous and Mental Diseases.

There was a time when most medical schools had a department of nervous and mental diseases. In this country, such departments have become almost nonexistent. Understandably the neurosurgeon, because of his special treatment technique, became a part of the department of surgery. However, the philosophy of dichotomy of the organic and functional causes of nervous and mental diseases has split the residual departments of nervous and mental diseases into separate divisions of neurology and psychiatry. Neurosurgery, through its remaining ever close to general surgery, has held to the stable and healthy traditions of medicine. Neurology, because of its continued ties to the basic sciences of its specialty—anatomy and physiology of the nervous system—has likewise been prevented from loosening its roots from medicine although its limbs have been pruned back, because several of the neurological disorders were lost to new medical and surgical therapeutic procedures.

Psychiatry, in its correct appreciation of the great need of medicine to accept the responsibility for the better understanding and treatment of unhealthy human behavior, took on the challenge. But after the acceptance of the challenge, lack of knowledge prevented relating the symptoms and signs of behavioral disorders to the basic sciences of medicine, in particular neuroanatomy and physiology. Freud himself is a case in point. It is known that Freud was well grounded in the basic sciences of the ner-

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vous system, including neuropathology and clinical neurology. He developed a strong interest in behavior problems. With this interest he recognized that the neuroanatomy and physiology as known in his time had little to contribute to the understanding and treatment of the neuroses and psychoses. It is clear that he was aware of the potential importance of the neurobiological sciences to behavioral disorders.

Following are a few of many examples of this from Freud's "General Introduction to Psychoanalysis."[3] In referring to a psychiatric clinical picture, he said that such psychic disturbances are open to therapeutic influence only when they can be identified as secondary phenomena of an otherwise organic affection. He referred to excitement, absentmindedness and distracted attention as cycle physiological moments. In his chapter on the psychology of errors: "It will depend on whether the specific psychic manifestations resulted directly from bodily organic material influences, in which case their investigation will not fall within the province of psychology, or whether it was more immediately the result of other psychic occurrences back of which, somewhere, the series of organic influences then began." Yet he made many statements which led his less well neurologically trained disciples to radically isolate psychiatry from its wholesome, traditional, medical roots. For example, Freud wrote, "To this end it [psychoanalysis] must enforce itself on every anatomical, chemical, or physiological supposition which is alien to it."

If his more vocal disciples had had Freud's grounding in the basic sciences and clinical fields of neurology, they would not have gone as far afield from the boundaries of sound traditional medicine. Also, if there had been in Freud's time the knowledge of the higher centers of the neuraxis which we have today, it is doubtful that his less well grounded disciples would have been able to expand their writings into the philosophical and at times religious dogma which certain segments of the psychoanalytical school spawned. Fortunately, thanks to to advances in neuroanatomy and physiology, these points of view and beliefs now are being dropped even by some of the more orthodox psychoanalysts.

But, the lack of adequate basic training in the biological and clinical neurological sciences has made them, with few exceptions, unable to correlate the more subtle and complex neurobiological knowledge of recent decades with behavioral disorders. Yet the neurobiological understanding of the complex functions of the higher levels of the neuraxis has reached sufficient clarity that the more neurobiologically minded psychiatrists (including those who have had formal psychoanalytical training) are now beginning to correlate their dynamic concepts of behavior, including those of Freud, with the function and structure of the nervous system.

Following are a few examples of advances in neurobiology made by neuroanatomists, neurophysiologists, neurologists, neurosurgeons and psychiatrists (including psychoanalysts) which establish behavior as a function of the nervous system.

Gerard,[4] a physiologist, expressed opinion that the psychoses are predominantly associated with disturbances in neuron metabolism. Change in plasma osmotic pressure, he held, influences appropriate specialized neurons in the hypothalamus. He went on to state that "we still have to discover the osmoreceptors of hallucinations and the chemoreceptors of dreams." Under the influence of theoretical engineering knowledge, called cybernetics, much attention has been and is being given to the continuous and discontinuous character of the interaction within the more complex neuronal networks of the higher levels of the neuraxis. Quoting Gerard again, "When the input [from environment] to our biological calculators has been effectively coded, the rules of operation already built into these nervous systems will suffice to grind out important answers in the mental area, as they already have in the biological."

One of the great advances made possible by contributions from neurophysiologists, neuroanatomists and neurosurgeons was the discovery of the influences that the reticular formation of the brain stem, the hypothalamus and interlaminar nuclei in the diencephalon have upon cerebral activity. The influence of these particular neuronal systems on the state of consciousness is already well established. This discovery and the elaboration of these findings is of utmost importance to psychiatry. It will be of primary concern to forward-looking neurologists and psychiatrists.

The growing knowledge of chemistry as related to behavior through the influence of chemicals on special levels and systems of the neuraxis—for example mescaline and lysergic diethylamide creating schizophrenic-like behavior—is a further contribution of the neurochemists and physiologists which will hasten the union of the now artificial dichotomy of the "organic" and "functional" specialists of disorders of the nervous system. The terms *conscious* and *unconscious* as used by the psychiatrists, and that are so distasteful to the neurologists in the absence of a neurobiological explanation, can now be acceptable to both. Gerard said that we may look upon unconscious acts in terms of automatic and condition-learned acts which reach conscious awareness by some kind of summation. The growing com-

prehension of neuronal networks with certain circular impulses in a more or less continuous fashion is a probable wedge into the understanding of memory, recall, awareness and alertness. A disturbance of these circular and reverberating circuits is a possible basis for the cause of affective, perceptive and ideational psychoses. These are a few of the neurophysiological and chemical advances which signal the neurologist to absorb disorders of behavior into his field of interest, and the psychiatrist to adjust his concepts of behavior dynamics and/or pathogenesis to the organ of the mind, the central nervous system.

Mackay,[6] a neurologist, in concluding a subject entitled "Memory as a Biological Function," clearly stated the need of orienting behavior—in this instance memory—more clearly to the basic stuff of medicine if it (behavior) is to remain truly an endeavor of the profession of medicine. Mackay observed: "It appears that memory is a basic attribute to all living things, by which patterns of sensitivity and response, both inborn and acquired, are retained and progressively modified under the impact of experience. Memory is thus indispensable in all behavior, making it at once consistent and modifiable." His concept of triangular pattern memories as a spatial and temporal function of the cerebral cortex and centroencephalic modifying function of the reticular formation of the brain stem, as unveiled by Magoun and others, is most sound. He further concluded that "in the higher animals and in man, therefore, memory can have no precise localization and thus cannot be said to 'reside' in the temporal lobe or in any other restricted area." In the simplest organisms memory seems to be dependent upon modifiable molecular structure. The memory mechanism in a nervous system is a most elusive function of neuronal networks by which topographic and sequential patterns of stimuli sensitize the network to subsequent stimuli in the same patterns. This probably occurs through the device of summation in reverberating circuits rather than by the facilitation of anatomical pathways. This dynamic approach to the physiology of memory promises much for our understanding of the behavior of living things.

Dr. Bernard Alpers, recent past president of the American Board of Neurology and Psychiatry, in his retiring presidential report to the Board, expressed concern over the desire of some workers to separate neurology and psychiatry. "I have been somewhat troubled," he said, "by a recent desire on the part of some members of our profession (not Board members) to separate neurology and psychiatry and to dispense with the neurological portions of our examinations . . . I need not emphasize to this Board the fact that the understanding of the structure and mechanism of the nervous system is not only helpful in the training of a psychiatrist but in my opinion is also useful. . . . Many of the problems which puzzle the psychiatrist are germane to the field of neurology and are the concern of investigators in this field. The problems of memory, consciousness, and of the emotions and endocrines come easily to mind. And more important still is that in-between land of the structural and psychogenic which has been so much enriched in recent years by the studies in psychomotor or temporal lobe seizures. I cannot believe that any psychiatrist can afford to overlook or neglect the contributions of neurology to his field and certainly young psychiatrists in training should be encouraged and expected to obtain such understanding."

Dr. Alpers then discussed the opinions expressed in certain psychiatric circles referring to the relationship of psychiatry to medicine but not to neurology through the field of so-called psychosomatics. He clearly pointed out that the rooting of psychiatry to medicine through psychosomatics is only achieved through the science of neurology. "Obviously they involve the nervous system, cerebrum, brain stem, spinal cord, and even peripheral nerves. They are as closely related to neurology as to medicine. Or, to avoid the humiliation of a jurisdictional dispute, let us say that they are part of medicine but allied to neurology. In this way the psychiatrist can have it both ways. He can have the dignity of alliance with medicine and avoid the stigma of inclusion with neurology. If he understands what is meant, it makes little difference; but there must be no abandonment of neurology." Doctor Alpers closed his presidential report to the Board with a quotation from scripture—Jeremiah, 23:28—"What hath the straw to do with the wheat?" And, said Dr. Alpers, "For myself, I hope threshing time never arrives for this Board and that straw and wheat never become separated."

Penfield[7,8] and associates found that stimuli of the temporal cortex may elicit hallucinations, dreams, memories, illusions and forced thinking. Furthermore, they observed stimuli of the mesial surface of the temporal lobes and insula can elicit such emotional behavior feelings as "scared feelings," "fright," "fear," and "sadness." Stimuli of these same neocortical regions will produce such visceral behavior and/or resulting sensations as hunger, cardiac acceleration and peculiar tastes. Such visceral phenomena are an integral part of the emotional experience even though in a modified form. This statement is further reinforced by studies which demonstrated that the hippocampus proper

and related rhinencephalic structures are involved in the integration of visceral behavior and emotional experience.

Cushing,[2] in his papers relating to the pituitary body, the hypothalamus and the parasympathetic nervous system, concluded that: "Those favorably disposed toward the neurogenic conception of ulcer have in process of time gradually shifted the burden of responsibility from the peripheral vagus to its center in the medulla, and now to the interbrain. newly recognized as a highly important, long overlooked station for vegetative impulses easily affected by psychic influences. So it may easily be that highly strung persons, who incline to the form of nervous instability classified as parasympathetic (vagotonic), through emotion or repressed emotion, incidental to continued worry and anxiety and heavy responsibility, combined with other factors such as irregular meals and excessive use of tobacco, are particularly prone to have chronic digestive disturbances with hyperacidity often leading to ulcer."

Cobb,[1] in a monograph on Foundations of Neuropsychiatry under the heading "Concerning Dichotomies" noted that dichotomies "mental or physical," "functional or organic" are inexact and misleading. Psychological phenomena such as thinking, wishing and dreaming, said Cobb, are just as much functions of the organism as are breathing, running and digesting. He would make three assumptions: (1) No biological process goes on without change of structure; (2) whenever the brain functions, there is organic change; (3) the brain is the organ of mind.

Rioch,[9] whose early neurophysiological contributions are well recognized, in a recent communication entitled "Certain Aspects of 'Conscious' Phenomena and their Neural Correlates" made some searching comments by melting together his basic neurophysiological contributions with his later clinical psychiatric (including psychoanalytic) experiences. Rioch correlated patterns of interaction between an individual and his inanimate and animate environment as functionally mediated through all the different levels of the nervous system from a phylogenetic orientation. He divided these interactions or transactions between the individual and his environment into six classes which may be summarized as follows: Class I are the optimal or complex transactions in which language and selection are paramount and have to do with goals in the future. Time is necessary, for even the most efficient nervous system cannot function "on the spur of the moment." Class II has to do with goals which have been predetermined. These transactions, as those in Class I, require that objects be perceived as extended in time and space. Class I and Class II transactions require the integration of all the phylogenetic levels of the nervous system. Class III allows for differential behavior, including capacity for differentiating three-dimensional space and differentiating time into a sequence of events. This may occur without selectivity (Class I) or anticipation (Class II). Transactions of Class III may be seen in panic states, or in patients with diffuse lesions in the forebrain or small bilateral midbrain lesions. Here again one recognizes the centrencephalic system in connecting the neocortex and certain diencephalic and mesencephalic centers. The older phylogenetic centers, being capable of decreasing the influence of the neocortex, minimize Class I and Class II more complex behavior, and result in Class III behavior. Class IV transactions are stereotyped with one or another aspect of the environment but not simultaneously. Such transactions in certain lower animals have survived surgical removal of the neocortex and paleocortex. Class IV behavior, therefore, does not require the phylogenetically newer and more complex levels of the neuraxis. Class V transactions are similar to those of Class IV but with limited stability of the organism with respect to space and almost no stability with respect to time. Class VI transactions are those in which only a part of the organism transacts with the environment. Such transactions are related to the function of "segmental systems" of Adolph Meyer. Classes I through IV may be regarded as having states of consciousness in decreasing ratio. Transactions of Classes V and VI Rioch would regard as unconscious. He would correlate the more complex symbolic type of human behavior with the phylogenetically younger and more complex higher levels of the neuraxis (the neocortex and paleocortex) and a simpler behavior of stereotyped patterns (including so-called "emotional" patterns) with the phylogenetically older levels—that is, the diencephalon and midbrain. There are also those transactions requiring collaborative interaction giving rise to "feelings" of affection, consideration, respect and so forth. Thus Rioch, a psychiatrist well grounded in his early training in neurophysiology, presses to correlate the different complexities and interaction levels of human behavior with the various levels of the neuraxis through a phylogenetic orientation from the highest, most complex, to the lowest, most simple segmental levels. Where, therefore, is one to draw the line of dichotomy between neurology and psychiatry or the organic and the functional?

The still relatively embryonic study of neurogenetics offers further hope and opportunity for bringing about a more integrated endeavor of our three too divergent medical specialties.

CONCLUSIONS

Brief review of a small number of investigators reporting advances in neurophysiology and anatomy of recent decades shows how this basic medical scientific knowledge is increasingly interrelating and correlating the clinical medical specialties of mind and nervous system—neurology, neurosurgery and psychiatry. The neurologist, interested in disorders of the nervous system, will expand his field of interest to human behavior opened by recent developments in neurobiology. The psychiatrist will reconstruct the foundation of his understanding of the diagnosis and treatment of human behavior on the basic medical sciences in his special field of endeavor—that is neuroanatomy and physiology. The neurosurgeon is a third integral part of the clinical specialty, for through his highly specialized technical approach he has and will continue to contribute to our research and to the solution of clinical problems. Only through the neurosurgeon's close association with the neurologist and psychiatrist will he be made aware of the problems which he can help to solve through his neurosurgical technique.

450 Sutter Street, San Francisco 8.

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For Your Patients—A number of specialists have asked that a slight copy change be made in Message No. 1. This has been done and now Message No. 1A is available as well as Message No. 1.

A Personal Message to YOU:

I consider it both a privilege and a matter of duty to be available in case of an emergency. However, you can understand that there are times when I may not be on call. I might be at a medical meeting outside the city, on a bit of a vacation—or even ill.

Consequently, I thought it would be a good precaution if—on this gummed paper which you can paste in your telephone book or in your medicine cabinet—I listed numbers where I can be reached at all times. Also, the number of a capable associate as an added service. Here they are:

OFFICE	HOME	MY DOCTOR
OFFICE	HOME	ASSOCIATE DOCTOR

Sincerely,

_____, M.D.

MESSAGE NO. 1A. Attractive, postcard-size leaflets printed on gummed paper, you to fill in telephone numbers and your signature. Available in any quantity, at no charge, as another service to CMA members. Please order by Message Number from CMA, PR Department, 450 Sutter, San Francisco.

Reaction Following Ingestion of 400 Mg. of Meprobamate

BENTON L. CORLEY, *M.D.*, and
FRANKLIN BRUNDAGE, *M.D.*, Arcadia

THE VIRTUES AND INDICATIONS for the use of meprobamate (Miltown® and Equanil®) have been widely publicized in many magazines of general circulation, and it now is quite common for one person who has some of the tablets to offer one or more of them to a friend as a cure for almost any complaint. Hence it appears advisable for physicians to report any untoward reactions they may observe following use of the drug.

REPORT OF A CASE

The patient, a 42-year-old white woman, accepted one tablet (400 mg.) of Miltown® to enable her to endure the emotional disturbance of a death in the family. Four hours later she noticed a pruritic, fine, maculopapular eruption on the waist, buttocks and extremities. Soon afterward weakness and orthostatic syncope occurred.

When examined approximately six hours after ingestion of the drug, the blood pressure was 110/70 mm. of mercury, the pulse rate 78 and respirations 18 per minute. The patient could not stand upright because of weakness and fainting. A prominent feature was pronounced generalized erythema. Epinephrine and antihistamines were administered and the following day the patient was stronger but the rash persisted as well as erythema and weakness. The blood pressure was 130/70 mm. of mercury. ACTH Gel® (corticotropin) was given and recovery was uneventful. The skin faded and there remained a dry scaling rash for four days.

COMMENT

Since the patient took no medicine other than the one tablet of Miltown, and as the symptoms were like those reported in other cases of the kind, it is believed that this was an instance of acute toxic reaction to meprobamate.

1108 South Baldwin Avenue, Arcadia (Corley).

Submitted November 13, 1956.

Marfan's Syndrome

Report of a Probable Case

JAMES E. REEVES, *M.D.*, and
H. R. IRWIN, *M.D.*, San Diego

IN 1896, MARFAN[2] described an interesting syndrome consisting of arachnodactyly associated with congenital heart defects, ocular abnormalities and faulty development of the musculoskeletal system.

The first reported American case was described in 1926 by Piper and Jones,[3] who also reviewed the literature to that time. In a more recent report, Black and Landay[1] noted that the diagnosis is made primarily on clinical observations, and that laboratory tests usually are noncontributory. They observed that in 60 per cent of the reported cases of Marfan's syndrome the patients had cardiac abnormalities.

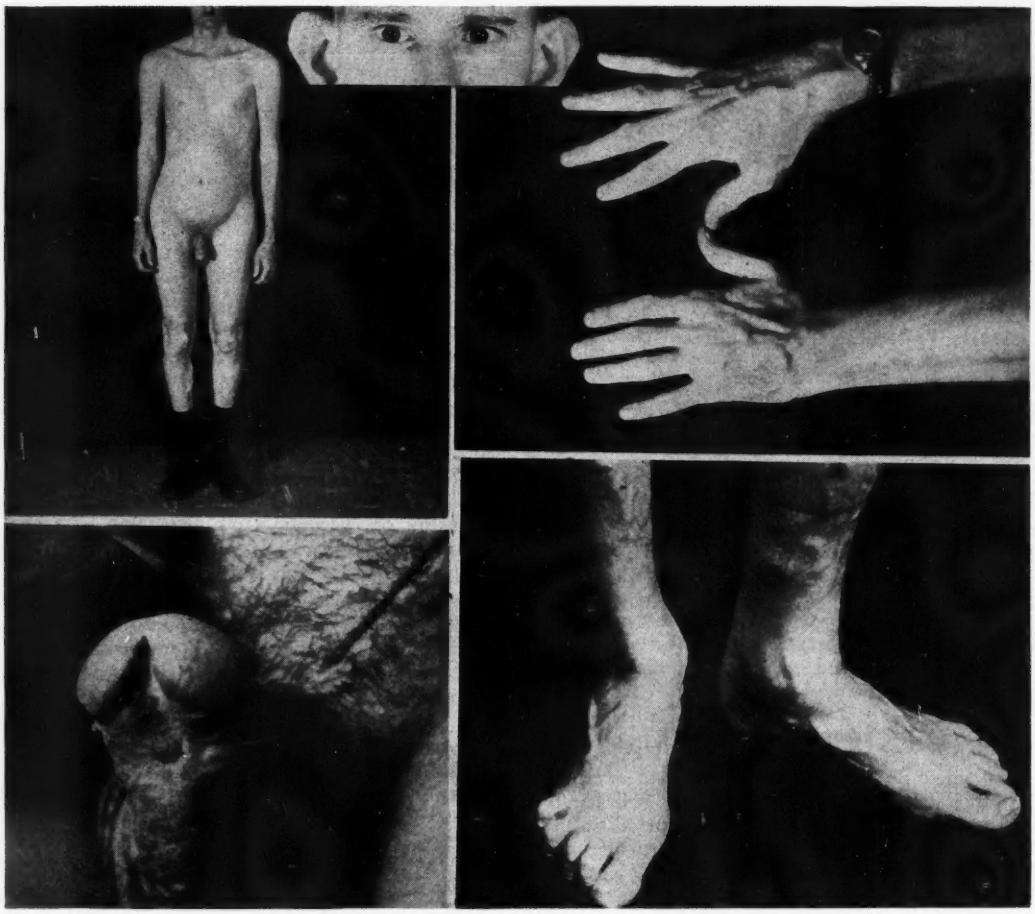
REPORT OF A CASE

The patient, a man 24 years of age, was first observed February 1, 1955. He was observed to be mentally retarded (the intelligence quotient about 60). The mother said the patient had been a "blue baby" until about one year of age. During childhood he had been in an institution for the feeble-minded for about seven years. There were no similar cases in either the maternal or paternal family history, the mother said. One sister, aged 26 years, and the father and mother, 46 and 44 years of age, were living and well.

The height of the patient was 72 inches, body weight 156 pounds and the arm span 75 inches. The ears were exceptionally prominent. Internal strabismus, "pigeon breast," hypospadias, slight webbing of the fingers, and third degree pes planus were noted. There was almost complete absence of subcutaneous fat. Pronounced overfilling of all visible veins was observed.

The heart, as outlined by percussion, was normal in size and shape. The pulse rate was 72. The blood pressure was 120/76 mm. of mercury in the left arm and 122/80 mm. in the right arm. A loud

Submitted August 23, 1956.



Visible abnormalities in the patient in the present case: "Pigeon breast," absence of subcutaneous fat, strabismus, slight webbing of spidery fingers, hypospadias, pes planus, venous distention.

"machinery murmur" upon systole was best heard over the apex of the heart and was transmitted to the great veins. No abnormalities were seen in a teleoroentgenogram of the chest. An electrocardiogram was within normal limits. An electroencephalogram showed a diffuse slight slowing of cerebral electrical activity (6 to 7 cycles per second). Results of examination of the blood and the urine were within normal limits. A Wassermann test was negative for syphilis.

The hernias were repaired and healing was by first intention.

It is believed that the conditions noted in this case were a classical Marfan's syndrome.

205 Walnut Street, San Diego 3 (Reeves).

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Traumatic Diaphragmatic Hernia; A Case Simulating Phrenic Nerve Avulsion

MILTON HOFFMAN, M.D., Pleasanton, and I. ALFRED BRECKLER, M.D., Sherman Oaks

IN THE CASE of diaphragmatic evisceration here reported, the diagnosis was obscured by roentgen findings typical of eventration of the diaphragm, surmised to be the result of phrenic nerve injury occurring simultaneously with a brachial plexus avulsion injury. The true diagnosis was not made until severe gastric dilatation and obstruction occurred.

The patient, a 25-year-old man, was admitted to another hospital on May 22, 1954, with multiple fractures of clavicle, scapula and lumbar spine that occurred in an automobile accident. There was a left brachial plexus injury. On June 14, 1954, x-ray films of the chest showed "left lower lobe pneumonitis." The musculoskeletal injuries were treated in a routine fashion.

In February, 1955, the patient began to complain of anorexia with occasional vomiting. An upper gastrointestinal series was reported as showing eventration of the diaphragm with no intrinsic gastric disease. Upon physical examination, it was noted that there were residual neuromuscular deformities of the left upper extremity and shoulder girdle due to injury of nerve roots in the cervical vertebrae 3 to 6. Fluoroscopic examination was carried out and the left diaphragm appeared to be elevated and to move in a parodoxical fashion.

Soon after admittance to Parks Air Force Base Hospital following an alcoholic debauch, the patient developed hematemesis and pyloric obstruction, which was partially relieved by Levine tube suction (Figure 1). More than 3,000 cc. of gastric contents was removed initially. The patient was seen during this acute episode by the thoracic surgery staff, and a review of previous films suggested the diagnosis of ruptured diaphragm. This was confirmed by a second gastrointestinal series (Figure 2). At operation for transthoracic repair of the lacerated diaphragm, an 8 cm. linear tear in the posterolateral diaphragm with avulsion of the costal attachment was observed. The stomach, spleen, transverse colon and omentum were eviscerated. Dense adhesions surrounded the spleen, which apparently had been injured in the initial trauma. The abdominal viscera were replaced and, following splenectomy, a repair of the diaphragmatic rent with suture to the chest wall was done. The diaphragm functioned normally at the completion of the repair. The postoperative course was uneventful (Figure 3).

Traumatic lacerations of the diaphragm are most frequent in the left central or tendinous portion of the diaphragm and may extend into a hiatus such as the esophageal hiatus. The cause may be a crushing or penetrating injury to the abdomen or the lower

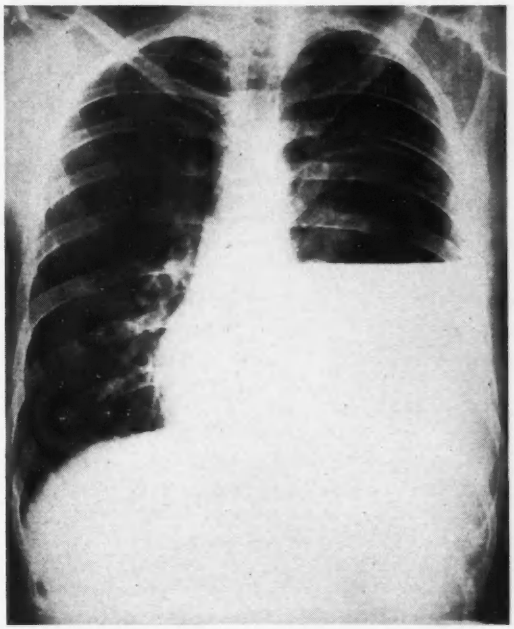

Figure 1.—April, 1955: Acute gastric dilation owing to obstruction at the hiatus of the traumatic diaphragmatic hernia.

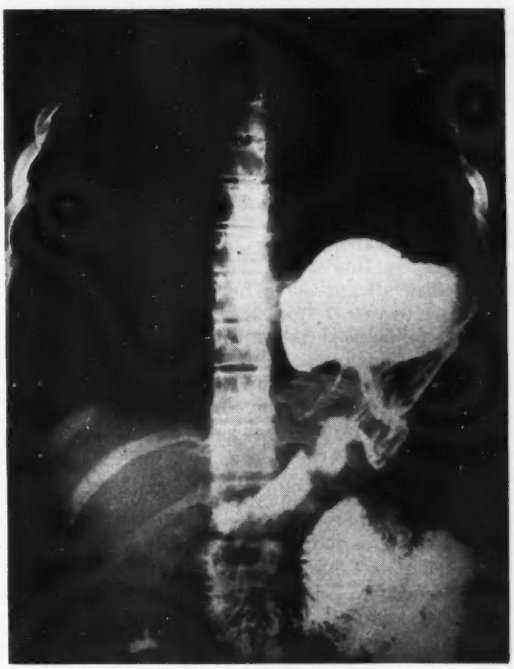

Figure 2.—April, 1955: The thoracic position of the obstructed stomach. The esophagogastric junction and pylorus are side by side at the hiatus.

From the Thoracic Surgery Section, Parks Air Force Base Hospital, Pleasanton.

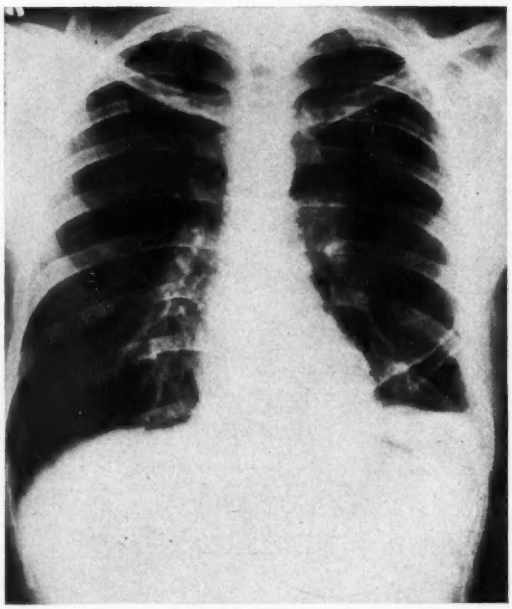

Figure 3.—May, 1955: Postoperative appearance of chest following repair of traumatic rupture of diaphragm. The diaphragm moved normally.

chest. A peritoneal hernia sac is not present.[3] The diagnosis is frequently obscured by coexistent injuries. Musselman[1] pointed out the frequency of combined injuries to diaphragm, spleen and kidney. It is believed that in the case here reported there was coexistent renal and splenic injury because of the initial microscopic hematuria and the finding at operation of dense splenic adhesions.

There are three phases in the natural history of traumatic diaphragmatic hernia.[2] In the initial phase the diaphragmatic injury is obscured by other injuries. Symptoms may vary from sparse findings in some cases to those of complete gastric obstruction in others. In this phase eventration is commonly erroneously diagnosed.[6] (In the present case, the diagnosis of eventration was based on evidence of damage to cervical nerve roots 4 to 6, which in part supply the phrenic nerve.) Not often is eventration of the diaphragm due to trauma. In the congenital forms, rarely is the phrenic nerve involved; instead, there is usually some intrinsic abnormality of the diaphragm. However, therapeutic phrenic crush or avulsion or diphtheritic phrenic neuritis will bring about eventration.

In the interval phase the diaphragmatic tear may be closed by omentum and spleen and there may be vague symptoms referable to the upper gastrointestinal tract.[5,7] The interval phase in the present case covered an eleven-month period. The defect in the diaphragm was closed by the eviscerated spleen.

The phase of obstruction may begin in a sudden, dramatic manner. A closed loop obstruction through the hiatus will cause pronounced gastric or colonic dilatation. The obstructive phase in the present case was partially relieved by gastric intubation. Obstruction probably developed as a result of an alcoholic spree when evisceration occurred with subsequent vomiting. When the stomach moves into the chest the antral region becomes obstructed, and swallowed air and fluid then causes distention. With "upside down stomach" (organo-axial gastric volvulus) only retching, and not vomiting, can occur.[4]

The diagnosis of rupture of the diaphragm is often facilitated by the use of diagnostic pneumoperitoneum. In the present case the condition was readily visualized by roentgen studies during the phase of obstruction. Reduction of the eviscerated abdominal organs was accomplished easily as a result of preoperative decompression and of splenectomy. It is felt that transthoracic repair facilitated fixing the avulsed diaphragm to the chest wall.

SUMMARY

In the case of traumatic rupture of the diaphragm here presented, the various phases in the natural history of traumatic diaphragmatic hernias are illustrated. The coincidence of brachial plexus injury, confusing shadows on x-ray films and a long asymptomatic interval led to erroneous diagnosis of eventration due to phrenic nerve avulsion.

13320 Riverside Drive, Sherman Oaks (Breckler).

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California MEDICINE

For information on preparation of manuscript, see advertising page 2

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EDITORIAL

Public Health League Honored

PROFESSIONAL AND LEGISLATIVE leaders joined hands last month in honoring the joint twenty-fifth anniversaries of a medical-legislative organization and its executive secretary.

The organization is the Public Health League of California; the executive secretary is Ben H. Read, who has served as its administrator, guide and representative since the time of its inception.

Back of this joint celebration lies a lot of California medical legislative history which is well known to the oldtimers but which may represent little more than a sacred cow to many physicians and other professionals who have come to California in more recent years.

Historically, the Public Health League of California came into being in 1932, when a group of physicians in Southern California became alarmed at some of the decisions of the State Legislature. These physicians realized that their right to practice medicine—even the manner in which they practiced it—was subject to the determinations of a two-chambered Legislature of elected representatives in Sacramento. The Legislature was subject to all the blandishments of promoters of all types of legislation, some of them enamored of ideas which did not represent the best in medical practice.

In those depression days, many able but unemployed persons were scratching for a living, and imaginations had ample time in which to create new ideas. Some of these ideas, translated into legislative proposals, could have lowered medical standards either by endorsing practices which were legally frowned upon or by creating new classes of the healing arts without regard to sound training.

While the physicians in Southern California were seeing the wisdom of having legislative representation, a group of their colleagues in the San Francisco area reached the same conclusion.

The combination of these two groups brought the Public Health League of California into being and resulted in the employment of Ben Harrison Read as its first executive secretary. Ben was an Iowa-born farm boy who had secured his education in a small Iowa college and had gone on, through newspaper ranks, to become secretary to the governor of Idaho. His political acumen was honestly acquired and his lessons well remembered.

In the quarter century of its existence, the Public Health League has been the legislative representative of medicine, dentistry, hospitals, dispensing opticians and pharmacists in the Sacramento legislative halls. Its job has been to review all legislation which would affect the practice of medicine or the allied arts and to work for the passage of measures deemed beneficial and for the defeat of those considered detrimental to the public—and to physicians.

While no organization expects to turn in a completely victorious record at all times, the batting average of the League over the years has been extremely high. In the past few sessions, it can safely be said, no deleterious legislation has been adopted and all approved legislation has been passed. Credit for this achievement goes squarely to the League and its able representatives.

An idea of the present magnitude of this work can be gained from the remarks of one legislative leader who sent his tribute to the two dinner meetings which honored the Public Health League and Ben Read last month. This man said: "Ben has to be friendly but firm, resolute but diplomatic, persuasive but not antagonistic. He has to learn to know well 120 politically minded members of the Legislature, *and their wives*. He has to follow 6,000 legislative bills which are flying in all directions at once. He has to greet his constituents with proverbial red-carpet treatment and, above all, he has to get his legislative chores done. Ben commands the

greatest respect from all of us in the Legislature and his record over the years speaks for itself."

Tributes in similar vein poured in last month from Governor Knight, Lieutenant-Governor Powers, the presiding and pro tem officers of both houses of the Legislature, committee chairmen and many individual legislators who have come to know the work of the League and of Ben Read over a long span of time.

Some of the most trying tests of the Public Health League have come in the repeated attempts of governors and others to foist compulsory health insurance programs on the people of California. The going was rough in 1938, again in 1945 and yet again in 1947. Hardly a session of the Legislature passes without some new proposal for a state medical system. The League has carried out its instructions in each of these proposals and has successfully defended physicians against becoming state employees, and the people, numbered cases.

Far from stopping at California state lines, Ben Read and the organizational principles of the League have set a pattern for other states. In the early '40's, Ben spent some time in Washington, and out of his experience there came the United Public Health League, a coalition of western state medical associations, which opened the first "lobbying" office for medicine in the national capital. The A.M.A. Washington office followed.

Physicians who have not lived through some of these experiences may look upon the Public Health League of California as simply an additional item, optional though it may be, on their annual medical society dues statements. Those who have worked with the League know it as the champion of medicine in the halls where regulatory legislation is made. And the wealth of proposed legislative bills affecting medicine in every session proves the wisdom of having a watchdog on hand. It is safe to say that there is no physician in California today who does not owe his present system and freedom of practice to the continuous safeguarding of his rights by the Public Health League.

In this alliance of medicine, dentistry and kindred professions in the voluntary membership framework of the Public Health League of California, the American system of democracy is served. Grass-roots organizations, however modest their beginnings, thus prove themselves able to meet legislative threats and to secure passage of sound legislation. The beneficiaries are the people, and many of the state officials paying tribute to this silver anniversary are the first to recognize that fact.

California today has sound medical standards of very high caliber. As long as the Public Health League remains on the job, those standards will be maintained.

The Legislature Speaks

IN HONOR of the silver anniversary of the Public Health League of California and its executive secretary, Ben H. Read, the Legislature of the State of California has adopted an Assembly Concurrent Resolution which was introduced into the Assembly on January 15, 1957 under the signatures of all 80 members of that body. The resolution follows:

Assembly Concurrent Resolution No. 40—Relative to honoring the Public Health League of California and Mr. Ben H. Read, executive secretary.

"WHEREAS, A quarter of a century ago an alert group of civic minded physicians of the California Medical Association gathered together to form the Public Health League of California 'organized to protect the public health by the preservation of ethical medical, dentistry and allied health services'; and

"WHEREAS, Shortly after the formation of the league, its membership was enlarged and strengthened by embracing dentistry, pharmacy, hospitals and dispensing opticians; and

"WHEREAS, Interest in legislative matters became an early function of the Public Health League to the end that high standards of medical care for the protection of the public could be presented and supported in the California Legislature; and

"WHEREAS, During these entire 25 years the Public Health League has been represented with the dignity and respect to which these honored professions are entitled by Mr. Ben H. Read, its executive secretary; and

"WHEREAS, Mr. Read is also celebrating 25 years of continuous activity as a legislative observer, during which time his fine dedication to the high principles of the professions he represented has won for him and the Public Health League, the confidence and esteem of the members of the California Legislature; and

"WHEREAS, The Silver Anniversary of the Public Health League of California will be commemorated with proper ceremonies in San Francisco on February 1, 1957, and in Los Angeles on February 6, 1957; now, therefore, be it

"*Resolved by the Assembly of the State of California, the Senate thereof concurring,* That the Members of the Legislature hereby extend to the Public Health League of California, its officers and its members, and to Mr. Ben H. Read, sincerest congratulations on their combined twenty-fifth anniversaries; and be it further

"*Resolved,* That the Chief Clerk of the Assembly be hereby directed to transmit suitably engraved copies of this resolution to the Public Health League and to Mr. Ben H. Read."

Letters to the Editor . . .

To the Editor:

I have just read "Care of the Patient with Advanced Cancer" in the October issue of CALIFORNIA MEDICINE. On the whole this is an excellent article, but to the urologist, one paragraph seems to be an important error.

It is paragraph two under "Steroid Hormones" on page 270, which states, in part, "In patients resistant to estrogens, a more cautious trial with androgenic hormone is justifiable."

Except in very rare instances when the cancer is completely out of sex hormone control, androgen invariably aggravates cancer of the prostate. This is a fact and not an opinion, and can easily be checked by reference to any reliable article on the subject. Estrogens, on the other hand, are usually palliative.

It is possible that the authors wished to suggest that cortisone be used when estrogen fails, or that this sentence is intended to refer to some disease other than cancer of the prostate.

In any case, I cannot believe that the C.M.A. Cancer Commission wishes to advocate androgen in advanced carcinoma of the prostate, and feel that it is most important to correct this error at the earliest opportunity.

The sentence preceding the one on androgen is also misleading in that it states that estrogen should be continued for at least three months. In general, estrogen should be continued for the life of the patient, with or without castration, according to his clinical course. The matter of estrogens in this disease is covered adequately in Section 10 of the same article, page 269.

Sincerely yours,
FREDERICK S. HOWARD, M.D.

To the Editor:

The criticism of Dr. Frederick S. Howard concerning the suggestion that androgens might be employed in patients with carcinoma of the prostate who have become resistant to treatment by estrogens is in some degree justifiable. The statement should have made more emphatic the possible augmentation of prostatic carcinoma by the use of androgens. By inference, the recommendation only related to those men whose disease has shown objective response to estrogens, and in whom it has developed a resistant phase. Inasmuch as the necessity of achieving maximum brevity in the publication of the Cancer Commission in which this statement appeared was of considerable importance, there were many areas throughout the manuscript in which elaboration would have been helpful, but in which elisions became necessary.

Further, assuming that steroid hormone therapy is properly used only for disease which has become metastatic, and assuming further that the most useful therapeutic measures for control in the form of castration and estrogen administration have become no longer helpful, one is obviously dealing with a patient who is facing early death, and frequently with requirements for considerable amounts of narcotic due to pain from skeletal disease. Under such a circumstance, and with the admonition that androgenic hormones may be unfavorable in their effect, I see no reason why an interested clinician should not make a cautious trial with the hope of obtaining further control of the disease in an occasional patient.

IAN MACDONALD, M.D.
Member of the Cancer Commission, California Medical Association

California MEDICAL ASSOCIATION

NOTICES & REPORTS

Executive Committee Minutes

Tentative Draft: Minutes of the 262nd Meeting of the Executive Committee, California Medical Association, San Francisco, January 31, 1957.

The meeting was called to order by Chairman Heron in the Windsor Room of the Sir Francis Drake Hotel, San Francisco, on Thursday, January 31, 1957, at 3:30 p.m.

Roll Call:

Present were President Charnock, President-elect MacDonald, Council Chairman Lum, Speaker Doyle, Auditing Committee Chairman Heron and Secretary Daniels. Absent for cause, Editor Wilbur.

A quorum present and acting.

Present by invitation during all or part of the meeting were Messrs. Hunton, Thomas and Gillette of C.M.A. staff, legal counsel Hassard, Doctor W. E. Batchelder, medical director of the Cancer Commission, and Doctors Wayne Pollock, T. Eric Reynolds, John W. Cline, David A. Wood and Francis J. Cox.

1. *Membership:*

(a) On motion duly made and seconded in each instance, 17 applicants were voted Retired Membership. These were:

Rubie Durgin, Alameda-Contra Costa County; Frank O. Brigham, William N. Carter, Roy A. Cummings, Ida Heissig, Arnold M. Scholz, Henry N. Shaw, Edgar B. Spear, Herbert E. Tebbetts, John Vruwink, Los Angeles County; Lloyd G. Tyler, Marin County; Einer V. Blak, Edward H. Bolz, Jr., Lois H. Brock, Adolph G. Rosenthal, Harold G. Watson, San Francisco County; William Friedberger, San Joaquin County.

(b) On motion duly made and seconded in each instance, 15 applicants were voted Associate Membership. These were:

Kenneth R. Gaarder, Alton R. Higgins, Alameda-Contra Costa; Lilly Li Chen, Burt Cockran, Jr., Gordon J. Kinley, James J. Quilligan, David M. Parker, Isaac Persyko, Stanley W. Wright, Los Angeles County; Harold M. Gibbons, Sacramento County; Warren S. McClatchey, Jerome F. Smith, San Diego County; Raymond Reitzel, John S. Wellington, San Francisco County; Billy W. Mounts, San Luis Obispo County.

(c) On motion duly made and seconded, 28 applicants were granted reduction in dues because of prolonged illness or postgraduate study.

2. *Committee on Other Professions:*

Doctor Wayne Pollock, chairman of the Committee on Other Professions, reported on meetings held with representatives of another group and requested authority to continue such meetings under a proposed program. On motion duly made and seconded, authority was granted for further meetings.

3. *Cancer Commission:*

Doctor John W. Cline discussed the terms of Assembly Bill No. 2359 and requested approval of it by the Association. On motion duly made and seconded, it was voted to approve this measure as a co-sponsor with the American Cancer Society.

DONALD A. CHARNOCK, M.D. . . . . President
FRANK A. MacDONALD, M.D. . . . . President-Elect
JAMES C. DOYLE, M.D. . . . . Speaker
J. NORMAN O'NEILL, M.D. . . . . Vice-Speaker
DONALD D. LUM, M.D. . . . . Council Chairman
ALBERT C. DANIELS, M.D. . . . Secretary-Treasurer
IVAN C. HERON, M.D. . Chairman, Executive Committee
DWIGHT L. WILBUR, M.D. . . . . Editor
JOHN HUNTON . . . . . Executive Secretary
General Office, 450 Sutter Street, San Francisco 8
ED CLANCY . . . . Director of Public Relations
Southern California Office:
417 South Hill Street, Los Angeles 13 • Phone MAdison 6-0683

4. *California Physicians' Service:*

Doctor T. Eric Reynolds, president of the Board of Trustees of California Physicians' Service, discussed several proposals now before that board on the questions of meeting dates and the structure of the organization. It was agreed that these matters should be presented to the Council for consideration.

5. *Rehabilitation:*

Doctor Francis J. Cox called attention to the community of interest in the fields of rehabilitation, disability, social security, workmen's compensation and allied fields. He requested authority to call a meeting of physicians interested in these subjects, for a discussion of basic policies, definitions, etc., and, on motion duly made and seconded, authority was voted.

6. *School Health:*

On motion duly made and seconded, it was voted to name Mr. Robert L. Thomas as the C.M.A. representative on a School Health Committee formed by the California Heart Association.

7. *Citizens' Committee on Tuberculosis:*

Doctor Daniels reported on a request received to name consultants to a Citizens' Committee on Tuberculosis formed in Sacramento County. On motion duly made and seconded, it was voted to request Doctors Howard Bosworth and Myles Black of Los Angeles to serve in this capacity.

8. *Professional Conduct:*

Mr. Hassard reviewed a complaint sent to the Association relative to treatment received from a physician, and the executive secretary was instructed to forward this to the appropriate county medical society.

9. *Commission on Medical Services:*

On motion duly made and seconded, it was voted to authorize the use of the mailing list for sending a pamphlet on health insurance issued by the Health Insurance Council.

10. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Executive Committee should be held in San Francisco on Wednesday, April 10, 1957, at 3:30 p.m.

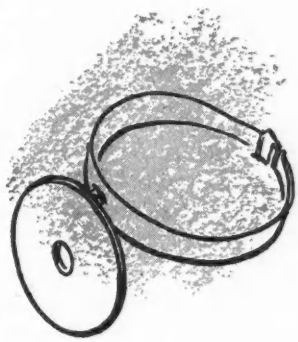
11. *Poliomyelitis Vaccinations:*

Mr. Hunton reported on two meetings which had been held by staff members with representatives of the State Department of Public Health on the subject of the polio vaccination campaign. A further meeting is planned for February 9 with health officers and the members of the Medical Executives Conference.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 6:45 p.m.

IVAN C. HERON, M.D., *Chairman*
ALBERT C. DANIELS, M.D., *Secretary*



TWO POSTGRADUATE IN

One in March O

SAN JOAQUIN VALLEY COUNTIES

Presented by *Postgraduate Activities Committee* of the California Medical Association, in cooperation with University of California School of Medicine, San Francisco, Seymour M. Farber, M.D., Head of Postgraduate Instruction.

FRESNO . . . March 21-22, 1957 . . . Hotel Californian

PROGRAM

THURSDAY MORNING, MARCH 21

RECENT PROGRESS IN OFFICE ENDOCRINOLOGY

9:00-9:55—*Advances in Diagnosis and Treatment of Diseases of the Thyroid*—Bernard G. Anderson, M.D., Chief of Thyroid Clinic; Clinical Instructor in Medicine.

10:10-11:05—*The Diagnosis and Treatment of Common Metabolic and Endocrine Bone Diseases*—Gilbert S. Gordan, M.D., Chief of Endocrine Clinics and Assistant Professor of Medicine.

11:05-12:00—*Recent Advances in the Field of Adrenals and in Diabetes*—Peter H. Forsham, M.D., Chief of Endocrinology and Metabolism and Associate Professor of Medicine and Pediatrics.

12:00-2:00—Luncheon and Panel Discussion—

(a) *Progress in Postgraduate Medical Education*—Seymour M. Farber, M.D.

(b) *What Are the Best Diagnostic Points in Endocrine Disease and the Most Appropriate Minimal Follow-up Studies Required*—Panel of morning faculty members.

THURSDAY AFTERNOON, MARCH 21

THE NEGLECTED BUSINESS WORLD OF THE PHYSICIAN

2:00-2:30—*Clinical Pathological Conference on Tax Problems of the Medical Profession*—Mr. Clarence E. Musto, General Partner of Morrison, Foerster, Holloway, Sherman and Clark.

2:30-3:00—*Estate Planning for Physicians*—Mr. David A. Bardes, Insurance Consultant.

3:00-3:30—*A Protective Investment Program—Tax Free Bonds, Common Stocks, Mutual Funds*—Mr. Albert E. Schwabacher, Jr., General Partner, Schwabacher and Co.

3:45-5:00—Panel Discussion and Questions from the Audience—*Dynamic Business Concepts in Planning for the Future*—Messrs. Musto, Bardes, Schwabacher.

5:00-6:00—Social Hour—Hotel Californian. All physicians present invited to attend. No charge.

FRIDAY MORNING, MARCH 22

BACTERIA, VIRUSES AND ANTIBIOTICS

9:00-9:30—*Rational Choice of Antimicrobial Agents*—Ernest Jawetz, M.D., Professor of Microbiology and Lecturer in Medicine and Pediatrics.

9:30-10:00—*Current Status of Treatment in Selected Bacterial Infections of Adults*—Henry D. Brainerd, M.D., Professor of Medicine and Chairman of the Department.

10:00-10:30—*Antimicrobial Therapy in Common Diseases of Children*—Henry B. Bruyn, M.D., Assistant Professor of Pediatrics and Medicine; Chief of Isolation Service, San Francisco Hospital.

10:30-11:00—*Panel Discussion on Antimicrobial Therapy.*

11:00-11:20—*Some Common Clinical Entities Associated With Newly Recognized Viruses*—Ernest Jawetz, M.D.

11:20-12:00—*Developments in Immunization Against Virus Diseases*—Henry D. Brainerd, M.D.

12:00-2:00—Luncheon. Discussion by participants and morning panel members: *Problems in the Diagnosis and Treatment of Bacterial and Viral Infections.*

(Continued bottom of next page)

INSTRUCTION INSTITUTES

One in April

NORTH COAST COUNTIES

Presented by *Postgraduate Activities Committee* of the California Medical Association, in cooperation with Stanford University School of Medicine, Lowell A. Rantz, M.D., Director of Postgraduate Programs.

SANTA ROSA . . . April 11-12, Veterans Memorial Auditorium

PROGRAM

THURSDAY, APRIL 11, 1957

9:00-10:00 a.m.—*Cardiac Surgery in Infancy and Childhood*—Frank L. Gerbode, M.D., Associate Professor of Surgery.

10:15-12:00 a.m.—Two Concurrent Panel Discussions* (you may go to one of your choice)—
Abdominal Pain.
Dermatology.

12:00-2:00 p.m.—Luncheon—One faculty member will be seated at each table for informal discussions with physicians present.

2:00-3:00 p.m.—*Significance of Systolic Murmur*—Herbert Hultgren, M.D., Associate Professor of Medicine.

3:15-5:00 p.m.—Two Concurrent Panel Discussions* (you may go to one of your choice)—
Diseases of the Chest.
Surgery in the Cardiac Patient.

7:00-12:00 p.m.—Social Hour, Dinner and Dancing.

FRIDAY, APRIL 12, 1957

9:00-10:00 a.m.—*Anticoagulant Therapy*—David Rytand, M.D., Professor and Executive, Department of Medicine.

10:15-12:00 a.m.—Two Concurrent Panel Discussions* (you may go to one of your choice)—
Hypertension.
Chemotherapy in Hematology.

12:00-2:00 p.m.—Luncheon.

2:00-3:00 p.m.—*Treatment of Anemia*—William Creger, M.D., Associate Professor of Medicine.

3:15-5:00 p.m.—Two Concurrent Panel Discussions* (you may go to one of your choice)—
Coma.
Endocrines.

**Each panel discussion will be led by three faculty members and one physician from the community.*

HOSTS: Sonoma County Medical Society . . . **REGIONAL CHAIRMAN:** Robert S. Quinn, M.D., 185 Sotoyome Street, Santa Rosa. FEE: $15.00. For additional information contact Postgraduate Activities Office, California Medical Association, 417 South Hill Street, Los Angeles 13. All California Medical Association members are cordially invited to attend.

(Continued from previous page)

FRIDAY AFTERNOON, MARCH 22

MEDICAL-LEGAL PROBLEMS

2:00-3:00—*The Doctor in Court*—Mr. Bernard E. Allard of the Oakland Bar.

3:00-3:45—*The Medical Witness*—A 34-minute film prepared jointly by the American Medical Association and the American Bar Association (first showing in California).

4:00-5:00—*The Doctor and Malpractice*—Mr. John Wynne Herron of the San Francisco Bar.

HOSTS: Fresno County Medical Society . . . **REGIONAL CHAIRMAN:** R. H. Whitten, M.D., 2912 Fresno Street . . . FEE: $15.00. For additional information, contact Postgraduate Activities office, California Medical Association, 417 South Hill Street, Los Angeles 13. All California Medical Association members are cordially invited to attend.

In Memoriam

AUSTIN, GERALD JOHN. Died in Bell Garden, December 30, 1956, aged 32. Graduate of the University of Southern California School of Medicine, 1949. Licensed in California in 1949. Doctor Austin was a member of the San Diego County Medical Society.

✤

BRUECHERT, STANLEY SCHAEFER. Died in Altadena, Febru-2, 1957, aged 53. Graduate of Rush Medical College, Chicago, Illinois, 1930. Licensed in California in 1930. Doctor Bruechert was a member of the Los Angeles County Medical Association.

✤

DE MAILLY, ROBERT G. Died in Daly City, January 16, 1957, aged 39, of gunshot wounds inflicted by an assailant. Graduate of Stanford University School of Medicine, Stanford-San Francisco, 1944. Licensed in California in 1944. Doctor de Mailly was a member of the San Francisco Medical Society.

✤

FISHER, VIRGIL LUTHER. Died in Long Beach, January 13, 1957, aged 81. Graduate of the American Medical Missionary College, Battle Creek, Michigan-Chicago, Illinois, 1906. Licensed in California in 1929. Doctor Fisher was a retired member of the Los Angeles County Medical Association and the California Medical Association, and an associate member of the American Medical Association.

✤

GREGORY, DEWEY QUINTIN. Died near Scotia, February 3, 1957, aged 59, of drowning after an automobile accident. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1943. Licensed in California in 1943. Doctor Gregory was a member of the Humboldt County Medical Society.

✤

HAWORTH, WALTER L. Died January 23, 1957, aged 72. Graduate of the Indiana University School of Medicine, Bloomington-Indianapolis, 1910. Licensed in California in 1916. Doctor Haworth was a member of the Los Angeles County Medical Association.

✤

HENDERSON, ANDREW MITCHELL, SR. Died January 31, 1957, aged 88. Graduate of Cooper Medical College, San Francisco, 1893. Licensed in California in 1894. Doctor Henderson was a life member of the Sacramento Society for Medical Improvement and the California Medical Association, and a member of the American Medical Association.

✤

KELLOGG, ERNEST C. Died August 1, 1956, aged 91. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1922. Licensed in California in 1923. Doctor Kellogg was a retired member of the Los Angeles County Medical Association and the California Medical Association, and an associate member of the American Medical Association.

KINNEY, JEAN GIRTON. Died in Santa Monica, December 24, 1946, aged 60, of coronary thrombosis. Graduate of the University of California School of Medicine, Berkeley-San Francisco, 1927. Licensed in California in 1927. Doctor Kinney was a member of the Los Angeles County Medical Association.

✤

MURRAY, ROBERT A. Died in La Mesa, January 17, 1957, aged 47, of cancer. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1938. Licensed in California in 1944. Doctor Murray was a member of the San Diego County Medical Society.

✤

RANDALL, SAMUEL B. Died in Santa Cruz, February 1, 1957, aged 58, of carcinoma of the stomach. Graduate of the University of California School of Medicine, Berkeley-San Francisco, 1925. Licensed in California in 1925. Doctor Randall was a member of the Santa Cruz County Medical Society.

✤

RAY, EARL B. Died in Bellflower, January 6, 1957, aged 59, of heart disease. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1929. Licensed in California in 1929. Doctor Ray was a member of the Los Angeles County Medical Association.

✤

TILLOTSON, JOSEPH ELMER. Died near Arbuckle, January 22, 1957, aged 53, of injuries suffered in an automobile accident. Graduate of Columbia University College of Physicians and Surgeons, New York, N. Y., 1929. Licensed in California in 1932. Doctor Tillotson was a member of the Yuba-Sutter-Colusa County Medical Society.

✤

THOMAS, BENJAMIN. Died in Oakland, January 25, 1957, aged 86. Graduate of the University of California School of Medicine, Berkeley-San Francisco, 1901. Licensed in California in 1901. Doctor Thomas was a retired member of the Alameda-Contra Costa Medical Association and the California Medical Association, and an associate member of the American Medical Association.

✤

TOWNE, EDWARD B. Died in Palo Alto, January 13, 1957, aged 73. Graduate of Harvard Medical School, Boston, Massachusetts, 1913. Licensed in California in 1919. Doctor Towne was a retired member of the Santa Clara County Medical Society and the California Medical Association, and an associate member of the American Medical Association.

✤

WILSON, JOHN C. Died in Los Angeles, January 9, 1957, aged 68, of hypertensive heart disease. Graduate of the University of California School of Medicine, Berkeley-San Francisco, 1912. Licensed in California in 1912. Doctor Wilson was a member of the Los Angeles County Medical Association.

memo from: medical review and advisory board OF THE CALIFORNIA MEDICAL ASSOCIATION

Death Certificates, Birth Certificates—Rules Governing Physicians and Coroners

PAUL MICHAEL, *M.D.*, Oakland

MANY PHYSICIANS have but cursory knowledge of the California State Health and Safety Code by which they are required to abide. Drawing attention to certain aspects of the Code may serve a need and be of some value to the practicing physicians of this state.

Coroners in the state sometimes have made local changes in procedure that conflict with this Code, not realizing there was no legal basis whatsoever for their decisions. For instance, there is a widely held belief that a death occurring within 24 hours after admission to a hospital is a "coroner's case." There is no law in the State of California which makes deaths occurring in hospitals within 24 hours after admission, coroners' cases provided the attending physician has a professional opinion as to the cause of death. If he does have such an opinion, the matter of how long the patient was in the hospital is of no consequence and, therefore, the physician is eligible to sign the death certificate and such a case is not one in which the coroner has jurisdiction.

Another misconception regarding jurisdiction of the coroner's office is regarding death during surgical operation. There is no law in this state which specifically states that such a death should come under the jurisdiction of the coroner, provided the operation is performed according to accepted medical practices and standards and the anesthetic given is proper as accepted by the medical profession. Here, again, the only exception to this rule would be if the attending physician were willing to go on record as not having a professional opinion as to the cause of death. Another exception might be a situation in which, say, there was some doubt about a drug that was used, which might raise a question of accident.

Another prevalent misconception regards the disposition of one's own body or parts of bodies. Section 20 of the California Probate Code provides:

> "Every person of sound mind, over the age of 18 years, may dispose of his or her separate property, real and personal, by will. In addition, every such person may by will dispose of the whole or any part of his or her body to a teaching institution, university, college, State Director of Public Health or legally licensed hospital, either for use as such institution, university, college or hospital may see fit, or for use as expressly designated therein."

Hence, an autopsy permit, among other things, signed by the decedent is valid.

On September 7, 1955, Senate Bill 995 amending Section 7113 and Section 7114 of the Health and Safety Code became law. The amended law reads as follows:

> "A cemetery authority or licensed funeral director or a licensed hospital or its authorized personnel may permit or assist, and a physician may perform, an autopsy of any remains in its or his custody upon the receipt of a written authorization from a person representing himself to be any of the following:
>
> "(a) The surviving spouse; (b) a surviving child or parent; (c) a surviving brother or sister; (d) any other kin or person who has acquired the right to control the disposition of the remains; (e) a coroner or any other duly

authorized public officer. A cemetery authority or a licensed funeral director or a licensed hospital or its authorized personnel is not liable for permitting or assisting, and a physician is not liable for performing, an autopsy pursuant to such authorization unless he or it has actual notice that such representation is untrue at the time the autopsy is performed. (Amended by Stats. 1955, Ch. 1334, Par. 1.)"

"Any person who performs, permits or assists at, an autopsy on a dead body without having first obtained (a) the authorization of the deceased in writing, including, but not limited to, the last will of the deceased; or (b) the authorization in writing of the person designated by Section 7100 of this code as having the right to control the disposition of the remains of the deceased; or (c) in the case of a cemetery authority or a licensed funeral director or a licensed hospital or its agents or a physician, the written authorization described in Section 7113 of this code, is guilty of a misdemeanor, except that this Section shall not be applicable to the performance of an autopsy by the coroner or other officer authorized by law to perform autopsies. (Amended by Stats. 1955, Ch. 1334, Par. 2.)"

Section (d) 7113 indicates that the right to give the authorization is only vested in the person who has acquired the right to control the disposition of the remains.

Section 7110 provides that both parents, if alive, must sign autopsy permits in the case of a deceased minor. If legally separated, the one who has legal custody and also has the right of disposition of the remains has the right to sign permits for autopsies.

Another pitfall which should be eliminated is signing of autopsy permits by members of the family before the death of the person upon whose body autopsy is to be done. These permits are legally invalid.

Article 3, Section 1041 states that a physician shall sign within fifteen hours after the death a certificate at the place of death and deliver it to the attending funeral director at his place of business or at the office of the physician. As this Section is of the utmost importance to all practicing physicians, the following passages are quoted from Article 3 regarding the signing of death certificates:

Section 10400.

"The medical certificate shall be made and signed by the physician, if any, last in attendance on the deceased except in the following cases:

"(a) Where the attending physician is unable to state the cause of death.

"(b) Where a person has been killed or has committed suicide.

"(c) Where death is the result of an accident.

"(d) Where an injury is a contributing cause of death.

"(e) Where the death occurred under such circumstances as to afford a reasonable ground to suspect that it was caused by the criminal act of another."

Section 10401.

"The physician shall within fifteen hours after the death deposit the certificate at the place of death, or deliver it to the attending funeral director at his place of business or at the office of the physician."

Section 10402.

"The physician shall specify in the certificate the time in attendance, the time he last saw the deceased person alive and the hour of the date at which death occurred."

Section 10403.

"The physician shall state the cause of death, so as to show the course of disease or sequence of causes resulting in the death, giving first the name of the disease causing death (primary cause) and the contributory (secondary) cause, if any, and the duration of each."

Section 10404.

"Indefinite and unsatisfactory terms, denoting only symptoms of disease or conditions resulting from disease, are not sufficient for the issuance of a burial or removal permit. Any certificate containing only such terms, as defined by the State registrar, shall be returned to the physician or person making the medical certificate for correction and more definite statement."

Section 10405.

"Causes of death which may be the result of either disease or violence shall be carefully defined; and if from violence, the means of injury shall be stated, and whether (probably) accidental, suicidal, or homicidal."

And finally, it behooves members of the medical profession to know the specific duties of the coroner. According to Article 4 of the Health and Safety Code of the State of California, the following facts more or less circumscribe his duties:

Section 10425.

"The certificate of death shall be made by the coroner in case of any death occurring under any of the following circumstances:

"(a) Without medical attendance.

"(b) During the continued absence of the attending physician.

"(c) Where the attending physician is unable to state the cause of death.

"(d) Where the deceased person was killed or committed suicide.

"(e) Where the deceased person died as the result of an accident.

"(f) Under such circumstances as to afford a reasonable ground to suspect that the death was caused by the criminal act of another."

Section 10426.

"The physician, funeral director, or other person in charge of the body shall notify the coroner or other proper official of such death for investigation and certification."

Section 10427.

"The coroner or other proper officer whose duty it is to hold an inquest on the body of any deceased person, and to make the certificate of death required for a burial permit, shall:

"(a) State in his certificate the name of the disease causing death, or if from external causes (1) the means of death; and (2) whether (probably) accidental, suicidal, or homicidal.

"(b) Furnish such information as may be required by the State registrar in order properly to classify the death. Upon the issuance of the death certificate and burial permit the cemetery authority may proceed with the interment (Amended by Stats. 1941, Ch. 182)."

Section 10428.

"The certificate shall contain as many facts required by this division as can be ascertained."

Section 10429.

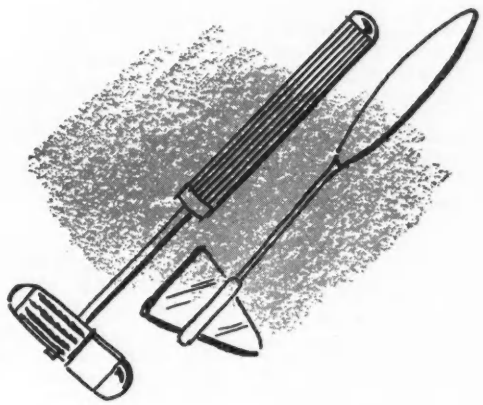
"The coroner shall within three days after examining the body deliver the death certificate to the attending funeral director."

Birth Certificates

Section 10175 of the Health and Safety Code provides that within four days after birth, a certificate shall be filed and if a physician was in attendance he shall sign and add any necessary statements about complications, length of gestation, etc.

* * *

It is hoped that the above items dealing with certain aspects of the Health and Safety Code will help practicing physicians in obtaining a better understanding of these legal problems.



WOMAN'S AUXILIARY
TO THE CALIFORNIA MEDICAL ASSOCIATION

Nurse Recruitment in California

Is THERE really a shortage of nurses in the State of California? Or, has there merely been a great deal of loose talk on this subject?

In the ten years following World War II California's population increased from 9 to 13.7 million. About 70 per cent of this great increase in growth has been due to the emigration of people from other parts of the country to California. Dr. Alice E. Ingmire, an associate professor at the University of California in Berkeley, says that California is a debtor state in that it has long been dependent upon nurses trained in other states. These out-of-state nurses make up a substantial proportion of the 70 per cent population increase due to emigration from other states. For this reason, our cities have not felt so much the pinch of shortage of staff nurses, but California has long felt the shortage of staff nurses in rural areas and the shortage of well-prepared nurses, particularly those prepared for supervision and teaching.

In nonprofessional nurse groups there will be increasing need for more people to care for the chronically ill and for convalescent patients in hospitals, nursing homes, and their own homes. Many of these need higher skills. In the registered and professional nursing groups the demand will sharply increase for industrial nurses in large centers, for school nurses to care for the five and six million new school children over the next five years, for public health nurses in increasing numbers for both urban and rural areas of the state, and for hospital staff nurses, particularly in the rural areas.

At present there is need for specialists in clinical nursing, in teaching, supervision, administration and for consultation services. One nurse in eleven holds a position of administrator, supervisor, faculty member or consultant. All of these positions require higher education and greater experience. Incidentally, there is also an increasing shortage of qualified laboratory technicians and qualified workers in various other allied fields of medicine.

What is being done to relieve this shortage of nurses? Actually the shortage is nation-wide and movements of national proportion are afoot, as witness spot announcements over radio, and occasionally over TV, magazine advertisements, and various poster displays for the purpose of interesting girls and young women in nursing as a profession. The National League for Nursing, the American Nurses' Association, and the Woman's Auxiliary to the American Medical Association are all active in this work. But are you aware of the roll your own California Woman's Auxiliaries are playing in this work?

Did you know that from woman's auxiliaries in California during the twelve months ended May 30 last year 228 girls received nursing scholarships? . . . That 88 future nurse clubs were operating in California high schools under county auxiliary sponsorship? . . . That county auxiliaries sponsored 151 career days or other programs related to nurse recruitment in California high schools?

These two recruitment aids, future nurses' clubs (under various names) and nursing scholarships are two of the most valuable methods for obtaining more nursing personnel. Future nurses' clubs bring the nursing profession closer to high school girls. The aim is to educate the prospective nurse as to her programming as well as her emotional and physical needs. The program aims also at educating school counselors as to the nursing profession's needs and requirements. Members of future nurses' clubs go on field trips to hospitals and laboratories, hear outside speakers such as physicians, nurse educators and alumnae now in the nursing profession. Films on nursing and allied fields are shown. Counseling is provided and questions of parents and students are answered. Such clubs have their own officers, run their own meetings and make their own plans. Auxiliary members are present to offer adult guidance, to arrange transportation for field trips, etc., and otherwise to facilitate club activities.

Nursing scholarships make possible nurse training for deserving girls who would otherwise be unable to obtain it. A healthy trend has been noted recently in the example of a large surgical supply firm which, instead of sending Christmas gifts to its various medical customers as it had done for many years, used the money these gifts would have cost to establish a number of nursing scholarships, publicizing this in a Christmas letter to its customers.

Mrs. Paul C. Blaisdell, president of the Woman's Auxiliary to the C.M.A., has rightly placed great stress on the nurse recruitment program. In charge of this important phase of auxiliary activity she has placed Mrs. Lloyd D. Fisher, who is herself a nurse educator by training, who has been chairman of her own Alameda County Nurse Recruitment Committee for several years, and who is also Nurse Recruitment Chairman of the California League for Nursing, Unit A. Under the guidance of Mrs. Fisher, criteria for scholarship administration and broadened recruiting methods are being established.

And so, doctor, your wives, in addition to managing your families and your homes, and attempting to keep you happy, are doing an increasingly big job in trying to relieve the shortage of nurses which threatens to cripple medical facilities designed to relieve human suffering.

NEWS & NOTES

NATIONAL • STATE • COUNTY

IMPERIAL

Dr. A. A. Adames was elected president of the Imperial County Medical Society at a recent meeting of the organization, and Dr. Burke Schoensee was elected vice-president. Dr. Ernest Brock was reelected secretary-treasurer. Dr. Sidney Tepper and Dr. Gene T. Richardson were named delegates to the California Medical Association.

LOS ANGELES

A number of medical or related organizations have scheduled **scientific, business or social meetings** to be held at the time of the annual meeting of the C.M.A., which is to be held in Los Angeles, April 27 to May 1:

Saturday, April 27

CALIFORNIA SOCIETY OF PATHOLOGY—Dinner meeting, 7:00 p.m. For reservations contact Ernest Simard, M.D., Secretary, 708 Cass Street, Monterey.

AMERICAN COLLEGE OF CHEST PHYSICIANS, CALIFORNIA CHAPTER—Scientific Meeting, 9:00 a.m. to 5:00 p.m., Cocoanut Grove, Ambassador Hotel. Reception, 5:00 p.m. to 8:00 p.m., Grove Lounge, Ambassador Hotel.

Sunday, April 28

WOMAN'S AUXILIARY TO THE CALIFORNIA MEDICAL ASSOCIATION RECEPTION—East and West Venetian rooms—6:00-8:00 p.m.—Honoring Mrs. Donald A. Charnock, wife of the President of the C.M.A. All doctors and their wives are cordially invited.

CALIFORNIA SOCIETY OF ALLERGY RECEPTION AND DINNER—Dolphin Court, 6:30 p.m.

AMERICAN ACADEMY OF PEDIATRICS, CALIFORNIA CHAPTER—Meeting and dinner, Embassy Foyer, 6:30 p.m.

Monday, April 29

BUREAU OF MEDICAL ECONOMICS—Variety Club Library, 10:00 a.m. to 4:00 p.m.

CALIFORNIA SOCIETY OF ALLERGY LUNCHEON—Variety Club, 12:15 p.m.

CALIFORNIA ACADEMY OF PREVENTIVE MEDICINE—Meeting, Regency Room, 7:00 p.m.

JEFFERSON MEDICAL ALUMNI DINNER—East Venetian Room, 6:30 p.m.

Tuesday, April 30

PRESIDENT'S DINNER DANCE—Cocoanut Grove, 8:00 p.m. Formal dress optional. Tickets will be on sale at the registration desk, Ballroom, Casino Floor.

C.M.A. PAST PRESIDENTS' LUNCH—Garden Room, 12:15 p.m.

WOMAN'S AUXILIARY LUNCHEON—Cocoanut Grove, 12:30 p.m.—Honoring Mrs. Paul Blaisdell and Mrs. Leonard D. Offield; Members of the State Advisory Board; and Past State Presidents.

BUREAU OF MEDICAL ECONOMICS—Variety Club Library, 10:00 a.m. to 4:00 p.m.

STATE BOARD OF HEALTH—Lido Room, 9:30 a.m.

Gifts totaling more than $85,000 were received in February by the **College of Medical Evangelists School of Medicine** from two national medical foundations. A check for $46,379 came from the American Medical Education Foundation, an organization sponsored since 1952 by the American Medical Association to solicit funds from the medical profession, state and local medical societies, and interested friends of the profession.

The sum of $39,375 was received from the National Fund for Medical Education. The fund was established in 1949 by President Eisenhower, then head of Columbia University. It seeks gifts from business, industry, labor, and other segments of American society.

* * *

Officers of the **Metropolitan Dermatological Society of Los Angeles,** elected to serve for 1957, are as follows: President, Dr. Edward L. Murphy, Burbank; vice-president, Dr. Laurence J. Underwood, Glendale; secretary-treasurer, Dr. Eliot Wolk, Sherman Oaks.

* * *

A grant of $10,000 to support **research in the field of hormones** with relation to crippling diseases has been awarded by the National Society for Crippled Children and Adults to Dr. Marshall R. Urist, an orthopedic surgeon associated with the University of California at Los Angeles School of Medicine.

* * *

Under the sponsorship of the Committee on Latin American Studies of the University of California at Los Angeles, and the Committee on Exterior Affairs of the School of Medicine, University of California at Los Angeles, a series of five lectures, covering the **diseases of the connective tissue,** will be presented by Dr. Javier Robles-Gil of the Institute of Cardiology of Mexico.

The lectures, which are free to interested physicians, will be held from 7:30 p.m. to 9:00 p. m., each evening during the week April 15 through April 19, 1957, in room 13-105 in the Medical Center, Westwood Campus.

SACRAMENTO

On March 16, 1957, the **Sacramento Society for Medical Improvement,** the oldest county medical society in continuous existence in California, celebrates its 89th anniversary at the Elks Club in Sacramento. It was organized March 17, 1868.

SAN FRANCISCO

Dr. Robert R. Newell, director of the isotope laboratory and coordinator of cancer teaching at the Stanford University School of Medicine, was presented with the American College of Radiology's gold medal award for distinguished service in radiology at a banquet meeting of the College last month in Chicago. Doctor Newell is the seventeenth man to win the high honor.

* * *

The Fourth Annual Series of Medical Clinics sponsored by the **San Francisco Academy of General Practice,** will be held at the Fort Miley Veterans Administration Hospital, 42nd Avenue and Clement Street in San Francisco, beginning on Tuesday, April 16, 1957, at 8 p.m., and will continue each Tuesday evening until May 21, 1957. Dr. Alex F. Fraser will be chairman and Dr. Forrest M. Willett, Associate Professor of Medicine, Stanford University School of Medicine, will be moderator.

Newer methods of diagnosis and treatment will be emphasized and most of the subjects will vary from last year's clinics.

All physicians are invited. The fee will be $15 for Academy members, $20 for nonmembers. All interns and residents are invited without charge.

* * *

In a competition to encourage the interest of medical students in **rheumatic fever research and cardiovascular diseases,** the San Francisco Heart Association is offering two awards for a total of $300 in memorial prizes. One of the awards, to be known as the T. Duckett Jones Memorial Prize, is $100 to be offered for the best 5,000 word essay on any aspect of rheumatic fever. The competition is open to students in any of the four classes at Stanford University School of Medicine or the University of California School of Medicine. To enable preclinical students to compete with advanced medical students, the essay may be written from an anatomical, physiological, bacteriological, or pharmacological viewpoint. Competition for this award closes May 1, 1957.

The other award is the William J. and Dorothy Fish Kerr Prize of $200, to be given for the best original observation in the clinical field of cardiovascular disease embracing diagnosis and treatment. Any intern, resident or resident-fellow in the counties contiguous to San Francisco Bay, is eligible to enter. To compete for the William J. and Dorothy Fish Kerr Memorial Prize, an applicant is advised to submit a written description of the observation, together with a letter from the chief of the hospital service observed. Contest closes April 1, 1957.

Papers in both competitions should be mailed to Harold H. Rosenblum, M.D., chairman, Awards Committee, San Francisco Heart Association, 604 Mission Street, San Francisco 5.

GENERAL

The American Gastroenterological Association will be host to the **World Congress of Gastroenterologic Societies** in May, 1958. The congress will convene at the Sheraton-Park Hotel, Washington, D. C., May 25 to 31, 1958. Guest speakers from many nations will participate, as well as members of the profession from the United States. The program will be divided into five major categories: Peptic ulcer, carcinoma of the stomach, malabsorption and sprue-like states, nutrition in relation to lesions of the liver and pancreas, and infections and infestations of the alimentary tract. Modern methods of translation will enable each person attending the congress to hear the presentations in the language of his choice.

On May 30 and 31, the annual meeting of the American Gastroenterological Association will be held in the Sheraton-Park Hotel.

* * *

The 1957 meeting of the **American Goiter Association** will be held in the Hotel Statler, New York City, May 28 to 30.

* * *

The ninth annual convention of the **International Academy of Proctology** will be held in New York, April 29 to May 2, 1957. There will be special emphasis on anal and rectal panel presentations, and on newer treatment methods, as requested by those who attended the Chicago meeting in 1956, according to the official announcement.

POSTGRADUATE EDUCATION NOTICES

THIS BULLETIN of the dates of postgraduate education programs and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 South Hill Street, Los Angeles 13.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Preventive Psychiatry in Pediatric Practice. Thursdays, March 21 through June 6. Twenty-four hours. Fee: $50.00.

Diagnosis and Management of Benign and Malignant Lesions of the Head and Neck. Wednesday, March 27. Six and one-half hours. Fee: $17.50.

Abdominal Pain. Wednesday, April 3. Six hours. Fee: $17.50.

Minor Surgery. Saturday, April 6. Six hours. Fee $25.00.

Inhalation Therapy. Wednesday, April 24. Six hours. Fee: $17.50.

Dissection of Extremities. Mondays, April 29 through June 10. Seventeen hours. Fee: $125.00.

Contact: Thomas H. Sternberg, M.D., Assistant Dean for Postgraduate Medical Education, U.C.L.A., Los Angeles 24. BRadshaw 2-8911, Ext. 202.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

The Newborn. Saturday, March 23. Six hours. Fee: $12.50.

Clinical Advances in Diagnosis and Treatment of Metabolic and Endocrine Diseases. March 28 to 30. 20 hours. Fee: $50.00.

Current Cardiac Concepts and Practice. Mornings, April 1 to 5. Seventeen hours. Fee: $50.00.

Electrocardiography in Daily Practice. Afternoons, April 1 to 5. Seventeen hours. Fee: $50.00.

Fundamental Principles of Radioactivity and the Diagnostic and Therapeutic Uses of Radioisotopes. Two or three month course limited to one enrollee per month. Tuition: $250.00 per month.

Medical Ophthalmology and Ophthalmoscopy. Thursday and Friday, May 16 and 17. Fourteen hours. Fee: $60.00.

Arthritis and Rheumatic Diseases. Thursday and Friday, May 16 and 17.*

Ear, Nose, Throat, Clinics and Seminars. Friday and Saturday, May 24 and 25.*

Contact: Seymour M. Farber, M.D., Head, Postgraduate Instruction, Office of Medical Extension, University of California Medical Center, San Francisco 22. MOntrose 4-3600, Ext. 665.

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*Hours and Fees to be announced.

STANFORD UNIVERSITY SCHOOL OF MEDICINE

Morning Clinical Conferences, each Monday, Room 515. *Contact:* D. H. Pischel, M.D., Professor, Division of Ophthalmology, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.

Postgraduate Conference in Surgery. March 18 to 22.

Postgraduate Conference in Ophthalmology. March 18 to 22.

Contact: Lowell Rantz, M.D., Director, Postgraduate Programs, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15. WEst 1-8000, Extension 207.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

Home Course in Electrocardiography. Physicians may register at any time and receive all 52 issues. Fifty-two weeks. Fee: $100.00.

Cardiac Resuscitation. Sponsored by the Los Angeles County Heart Association each Wednesday throughout the year, 4 to 6 p.m. Residents admitted without fee. Tuition for all other physicians: $30.00. (Each session all-inclusive.)

Physics and Clinical Application of Radioactive Isotopes. Fridays 4 to 5 p.m., March 1 to July 12, Los Angeles County Hospital and Cedars of Lebanon Hospital.

Conferences and Live Clinics in Diseases of the Liver and Biliary Tract. All day, each day, Friday, Saturday and Sunday, March 22, 23, and 24, 1957. Hotel Statler and Los Angeles County Hospital. Fee: $65.00.

Contact: Phil R. Manning, M.D., Director, Postgraduate Division, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33. CApital 5-1511.

COLLEGE OF MEDICAL EVANGELISTS

Operative Surgery. Wednesdays, March 20 through June 5, 1957. Thirty hours.

Gynecology. Wednesdays, March 27 through May 29, 1957. Ten hours.

Thoracic Surgery. Wednesdays, April 24 through May 15, 1957. Eight hours.

Contact: Chairman, Section on Graduate and Postgraduate Medicine, College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles 33. ANgelus 9-9131, Ext. 205.

CALIFORNIA MEDICAL ASSOCIATION POSTGRADUATE COURSES

AUDIO DIGEST FOUNDATION, a nonprofit subsidiary of the C.M.A., now offers (on a subscription basis) a series of hour-long tape recordings designed to keep the physician abreast of current happenings in his particular field. Composed of practice-useful abstracts from 600 leading journals, with short lectures and editorial comments from prominent physicians, Audio Digest offers programs covering general practice, surgery, internal medicine, obstetrics and gynecology, and pediatrics.

Contact: Claron L. Oakley, editor, 1919 Wilshire Blvd., Los Angeles 57.

POSTGRADUATE INSTITUTES, 1957

SAN JOAQUIN COUNTIES in cooperation with University of California, San Francisco, March 21 to 22, Hotel Californian, Fresno. Chairman: Richard H. Whitten, M.D., 2912 Fresno Street, Fresno.

NORTH COAST COUNTIES in cooperation with Stanford University, April 11 to 12, 1957, Santa Rosa, Veterans Memorial Auditorium. Chairman: Robert S. Quinn, M.D., 185 Sotoyome Avenue, Santa Rosa.

SACRAMENTO VALLEY COUNTIES in cooperation with College of Medical Evangelists, June 19 to 21, 1957, Tahoe Tavern, Lake Tahoe. Chairman: C. M. Blumenfeld, M.D., 4700 Parkridge Road, Sacramento.

Contact: One of the chairmen listed above, or Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 So. Hill Street, Los Angeles 13. Madison 6-0683.

Medical Dates Bulletin

MARCH MEETINGS

CHILDREN'S HOSPITAL, San Francisco postgraduate course on The Newborn, Nurses Auditorium, 3801 Sacramento Street, March 23. *Contact:* Medical Extension, University of California Medical Center, 2nd and Parnassus, San Francisco 22.

SOUTHERN CALIFORNIA SOCIETY OF GASTROENTEROLOGY dinner meeting and lecture: "Effects of Antibiotics on the Gastrointestinal Tract," Lowell Rantz, M.D., Stanford University School of Medicine. March 26, 6:30 p.m., Los Angeles County Medical Association Bldg. *Contact:* L. M. Asher, M.D., secretary, 436 North Roxbury Drive, Beverly Hills.

CITY OF HOPE MEDICAL CENTER postgraduate course "Newer Advances in the Diagnosis and Treatment of Surgical Heart Disease. March 26 and 27. Fee: $15.00 for one day, $25.00 for both days. *Contact:* Julian Love, M.D., Director of Postgraduate Medicine, City of Hope Medical Center, Duarte.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Tulare County Medical Society, March 28.§

CALIFORNIA TUBERCULOSIS AND HEALTH ASSOCIATION and the CALIFORNIA TRUDEAU SOCIETY Joint Annual Meeting, Hotel Statler, Los Angeles, March 28 to 30, 9 a.m to 5 p.m. *Contact:* E. L. Daggett, Director, Public Information, 130 Hayes St., San Francisco 2, or telephone HEmlock 1-8771.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Los Angeles County Medical Association, March 31.§

APRIL MEETINGS

LETTERMAN ARMY HOSPITAL "Surgery in Acute Trauma," 8 a.m. to 4:30 p.m., April 1 to 3.‡

SANTA CLARA AND SAN MATEO COUNTY HEART ASSOCIATIONS Postgraduate Symposium on Heart Disease. Palo Alto Community Center, 1305 Middlefield Road, April 3. *Contact:* Louise Hestwood, executive director, Santa Clara County Heart Association, 461 Porter Building, San Jose.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Marin County Medical Society, April 4.§

‡ *Contact:* Major Max E. Knickerbocker, MSC, Chief of Education and Training Branch, Letterman Army Hospital, San Francisco.

INTERNATIONAL COLLEGE OF SURGEONS, Regional Meeting, Las Vegas, Nevada, April 8 and 9. *Contact:* Ross V. Parks, M.D., 1930 Wilshire Blvd., Los Angeles 57.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Ventura County Medical Society, April 9.§

CALIFORNIA SOCIETY OF ANESTHESIOLOGISTS, INC., Annual Meeting, Sun Valley, Idaho, April 9th. *Contact:* Francis E. Guinney, M.D., secretary, 2790 Monte Mar Terrace, Los Angeles 64.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Riverside County Medical Society, April 11.*

UNITED STATES-MEXICO BORDER PUBLIC HEALTH ASSOCIATION Fifteenth Annual Meeting, April 9 to 12, San Antonio, Texas. *Contact:* Donald G. Davy, M.D., State Department of Public Health, 2151 Berkeley Way, Berkeley.

VALLEY CHILDREN'S HOSPITAL Spring Clinics, Roosevelt High Auditorium, Fresno, April 12-13. *Contact:* Valley Children's Hospital, Millbrook and Shields Avenue, Fresno.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Kern County Medical Society, April 16.§

SAN FRANCISCO HEART ASSOCIATION Nurses Institute on the Care of the Cardiac Patient, April 17 and 18, 8:30 a.m. to 5 p.m., San Francisco. *Contact:* Mr. Lawrence Kramer, Executive Director, San Francisco Heart Association, 604 Mission Street, San Francisco, or telephone: YUkon 2-5753.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for San Luis Obispo County Medical Society, April 20.§

LETTERMAN ARMY HOSPITAL "Oral Surgery," 8 a.m. to 4:30 p.m., April 22 to 26.‡

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Merced County Medical Society, April 25.§

CALIFORNIA MEDICAL ASSOCIATION Annual Meeting, Ambassador Hotel, Los Angeles, April 28 to May 1. *Contact:* John Hunton, executive secretary, 450 Sutter St., San Francisco 8, or Ed Clancy, director of Public Relations, 417 S. Hill St., Los Angeles 13.

MAY MEETINGS

CALIFORNIA CONFERENCE OF LOCAL HEALTH OFFICERS. Auditorium, State Building, 217 West First Street, Los Angeles, May 2 and 3. *Contact:* Donald G. Davy, M.D., State Dept. of Public Health, 2151 Berkeley Way, Berkeley.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Napa County Medical Society, May 8.§

CALIFORNIA HEART ASSOCIATION Annual Meeting Lafayette Hotel, San Diego, May 17, 18, and 19. *Contact:* J. Keith Thwaites, executive director, California Heart Association, 1428 Bush Street, San Francisco.

WESTERN BRANCH, AMERICAN PUBLIC HEALTH ASSOCIATION annual meeting, Lafayette Hotel, Long Beach, May 29 and June 1. *Contact:* Mrs. L. Amy Darter, Secretary-Treasurer, State Dept. Public Health, 2151 Berkeley Way, Berkeley.

§*Contact:* Walter E. Batchelder, M.D., Medical Director, Cancer Commission, Suite 816, 450 Sutter St., San Francisco.

JUNE MEETINGS

CHILDREN'S HOSPITAL OF THE EAST BAY Pediatric Seminar and Clifford Sweet Lectures, June 7 to 8. Guest lecturer: Sydney S. Gellis, M.D., Boston. *Contact:* James Dennis, M.D., medical director, 5105 Dover St., Oakland 9.

STATE BOARD OF MEDICAL EXAMINERS Oral Examination, San Francisco, June 15.*

IDAHO STATE MEDICAL ASSOCIATION 65th Annual Meeting, Sun Valley, June 16 to 19. *Contact:* Mr. Armand L. Bird, executive secretary, 364 Sonna Bldg., Boise, Idaho.

STATE BOARD OF MEDICAL EXAMINERS Written Examination, San Francisco, June 17 to 20.

WYOMING STATE MEDICAL SOCIETY ROCKY MOUNTAIN MEDICAL CONFERENCE Annual Joint Meeting, Jackson Lake Lodge, Moran, Wyoming, June 16 to 19. *Contact:* H. L. Harvey, M.D., Casper, Wyoming.

SUMMER AND FALL MEETINGS, 1957

COLORADO DIVISION, CANCER SOCIETY ROCKY MOUNTAIN Cancer Conference, 9 a.m., July 10 and 11, Shirley-Savoy Hotel, Denver. *Contact:* John S. Bouslog, M.D., Chairman, 835 Republic Bldg., Denver 2.

STATE BOARD OF MEDICAL EXAMINERS Oral Examination, Los Angeles, August 17.*

STATE BOARD OF MEDICAL EXAMINERS Written Examination, Los Angeles, August 19 to 22.

UTAH STATE MEDICAL ASSOCIATION Annual Scientific Session, September 5 to 7, Hotel Utah, Salt Lake City, Utah. *Contact:* Harold Bowman, 42 South Fifth Street, Salt Lake City.

SAINT JOHN'S HOSPITAL Annual Postgraduate Assembly, September 12 to 14, Saint John's Hospital, Santa Monica. *Contact:* John C. Eagan, M.D., director, Postgraduate Assembly, 22nd Street at Santa Monica Blvd., Santa Monica.

WASHINGTON STATE MEDICAL ASSOCIATION Annual Meeting, Olympic Hotel, Seattle, Washington, September 15 to 18. *Contact:* Mr. Ralph W. Neill, executive secretary, 1309 Seventh Ave., Seattle, Washington.

NEVADA STATE MEDICAL ASSOCIATION Annual Meeting, Las Vegas, September 25 to 28. *Contact:* Nelson B. Neff, executive secretary, P. O. Box 188, Reno.

SAN FRANCISCO HEART ASSOCIATION 28th Annual Postgraduate Symposium on Heart Disease, October 2 to 4, St. Francis Hotel, San Francisco. *Contact:* Lawrence I. Kramer, Jr., executive director, 604 Mission St., San Francisco.

FIRST WESTERN INDUSTRIAL HEALTH CONFERENCE, Biltmore Hotel, Los Angeles. October 4 to 6. *Contact:* E. J. Zaïk, M.D., secretary, Western Industrial Medical Association, 740 South Olive Street, Los Angeles 14.

CALIFORNIA SOCIETY OF INTERNAL MEDICINE Annual Meeting, October 25 to 27, El Mirador, Palm Springs. *Contact:* Mrs. Mildred B. Coleman, assistant secretary, 350 Post St., San Francisco 8.

CALIFORNIA ACADEMY OF GENERAL PRACTICE Ninth Annual Scientific Assembly, November 3 to 6, Hotel Statler, Los Angeles. *Contact:* William W. Rogers, executive secretary, 461 Market Street, San Francisco.

*NOTE: In regard to the dates of oral examinations, applicants are requested *NOT* to arrange to come to an oral examination until they receive a notice of the action of the Credentials Committee advising them of the time and place to appear.

INFORMATION

Recommendations for Driver Licensing

NEW DRIVER licensing requirements have been proposed by 125 leading medical specialists from the United States and Canada and traffic safety authorities in government and industry, who met at New York University May 23, 1956, for an all-day workshop conference on Medical Aspects of Motor Vehicle Accident Prevention. These recommendations, together with an analysis of research needs, are contained in the 32-page report of the proceedings, contained in full in the December 15 issue of the *New York State Journal of Medicine.*

Co-sponsored by the university's Center for Safety Education and the NYU-Bellevue Medical Center, this pioneer conference was held in cooperation with the New York Academy of Medicine's Committee on Public Health, the New York Industrial Medical Society, and several county medical societies. Dr. George E. Armstrong, vice-president for medical affairs at New York University, was conference chairman, while Dr. Herbert J. Stack, director of the Center, served as coordinator.

Among the more important conclusions and recommendations arrived at by the conference participants were the following:

Driver attitudes and personality characteristics have a major role in the causation of traffic accidents and the research in this area must be continued and intensified.

Qualifying medical examinations should be mandatory prior to the first issuance of a license to an individual and a qualifying examination should be given prior to each renewal of the license.

Fourteen cardiovascular conditions, ranging from severe diminished cardiac reserve to fixed hypertension above 180/100 mm. of mercury, were specified as disqualifying for motor vehicle operation.

Individuals subject to epilepsy and other conditions which bring about transient lapse of consciousness or loss of motor control should be periodically examined to determine their fitness to drive, and the motor vehicle commissioner should have the assistance of a panel of specialists for purposes of evaluation.

The minimum visual requirements for private car operation should be a correctible visual acuity to 20/40 Snellen in one (the better) eye and a form field of 70° in the horizontal meridian in each eye, or 140° in one eye, with vision to be reexamined every three years.

Certain conditions of the head and neck, diseases of the thoracic cage, limited functions of arms and legs, and certain conditions of the spine should be considered as precluding the safe operations of motor vehicles.

If alcohol is detected by chemical tests when a driver is involved in an accident, or if he refuses to take a test, a demerit mark should be placed on his driving record. In case of a second accident, if alcohol is again detected, or if he again refuses to take a test, the driver's license should be indefinitely suspended while the driver's drinking habits are investigated by a clinician appointed by the authorities.

Reprints of the proceedings are available from the Center for Safety Education, New York University, Washington Square, New York, at 50 cents a copy; in quantities of ten or more, 40 cents each.

X-rays and Other Ionizing Radiation

The Responsibilities of the Medical Profession

A Statement by the United Nations Scientific Committee on the Effects of Atomic Radiation

THE United Nations General Assembly, being aware of the problems in public health that are created by the development of atomic energy, established a Scientific Committee on the Effects of Atomic Radiation. This committee has considered that one of its most urgent tasks was to collect as much information as possible on the amount of radiation to which man is exposed today, and on the effects of this radiation. Since it has become evident that radiation due to diagnostic radiology and to radiotherapy constitutes a substantial proportion of the total radiation received by the human race, the committee considers it desirable to draw attention to information that has been obtained on this subject.

Modern medicine has contributed to the control of many diseases and has substantially prolonged the span of human life. These results have depended in part on the use of radiation in the detection, diagnosis and treatment of disease. There are, however, few examples of scientific progress that are not attended by some disadvantages, however slight. It is desirable therefore to review objectively the possible present or future consequences of increased irradiation of populations which result from these medical applications of radiation.

It is now accepted that the irradiation of human beings, and particularly of their germinal tissues, has certain undesirable effects. While many of the somatic effects of radiation may be reversible, germinal irradiation normally has an irreversible and therefore cumulative effect. Any irradiation of the germinal tissues, however slight, thus involves genetic damage which may be small but is nevertheless real. For somatic effects there may however be thresholds for any irreversible effects, although if so these thresholds may well be low.

The information so far available indicates that the human race is subjected to natural radiation,* as well as to artificial radiation due to its medical applications, to atomic industry and its effluents and to the radioactive fall-out from nuclear explosions. The committee is aware of the potential hazards that such radiation involves, and it is collecting and examining information on these subjects.

The amount of radiation received by the population for medical purposes is now, in certain countries, the main source of artificial radiation and is probably about equal to that from all natural sources. Moreover, since it is given on medical advice, the medical profession exercises responsibility in its use.

The committee appreciates fully the importance and value of the correct medical use of radiation, both in the diagnosis of a large number of conditions, in the treatment of many such diseases as cancer, in the early mass detection of conditions such as pulmonary tuberculosis, and in the extension of medical knowledge.

Moreover, it appreciates fully the contribution of the radiological profession, through the International Commission on Radiological Protection† in recommending maximum permissible levels of irradiation. As regards those whose occupation exposes them to radiation, the establishment of these levels depends on the view that there are doses which, according to present knowledge, do not cause any appreciable body injury in the irradiated individual; and also on the consideration that the number of people concerned is sufficiently small for the genetic repercussions upon the population as a whole to be slight. Whenever exposure of the whole population is involved, however, it is considered prudent to limit the dose of radiation received by germinal tissue from all artificial sources to an amount of the order of that received from the natural background radiation.

It appears most important therefore that medical irradiations of any form should be restricted to those which are of value and importance, either in investigation or in treatment, so that the irradiation of the population may be minimized without any impairment of the efficient medical use of radiation.

The committee is consequently anxious to receive information through appropriate governmental channels as to the methods and the extent by which such economy in the medical use of radiation can be achieved, both by avoiding examinations which are not clearly indicated and by decreasing the exposure to radiation during examinations, particularly if the gonads, or the fetus during pregnancy, lie in the direct beam of radiation. It seeks, in particular, to obtain information as to the reduction in radiation of the population which might be achieved by improvements in instrument design, by fuller training of personnel, by local shielding of the gonads, by choosing appropriately between radiography and fluoroscopy, and by better administrative arrangements to avoid unnecessary repetition of identical examinations.

The committee also seeks the cooperation of the medical profession to make possible an estimate of the total radiation received by the germinal tissue of the population before and during the childbearing age. It considers it to be essential that standardized methods of measurement, of types at present available, should be widely used to obtain this information and it emphasizes the value of adequate records, maintained by those using radiation medically, by the dental profession, and by the responsible organizations in allowing such radiation exposure to be evaluated. The committee is convinced that information of this type will make it possible to decrease the total medical irradiation of the population while preserving and increasing the true value of the medical uses of radiation.

*The radiation due to natural sources has been estimated to cause between 70 and 170 millirem of irradiation to the gonads per annum in most parts of certain countries in which it has been studied, although higher values are found locally in some areas. See the reports "The hazards to man of nuclear and allied radiations" published by the United Kingdom Medical Research Council in June 1956, in which also the millirem is defined; and from information submitted to the Committee.

†See the report of the International Commission on Radiological Protection (published in the British Journal of Radiology—Supp. 6, of December 1954—in the Journal francais d'electro-radiologie—No. 10, of October 1955—etc., and revised in 1956).

APPLICATION FOR HOUSING ACCOMMODATIONS

FOR YOUR CONVENIENCE in making hotel reservations for the coming meeting of the **California Medical Association,** April 28-May 1, 1957, Los Angeles, hotels and their rates are at the right. Use the form at the bottom of this page, indicating your first and second choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. **All requests for reservations must give definite date and hour of arrival as well as definite date and approximate hour of departure; also names and addresses of all occupants of hotel rooms must be included.**

ALL RESERVATIONS MUST BE RECEIVED BEFORE: APRIL 1, 1957

Eighty-sixth Annual Session
CALIFORNIA MEDICAL ASSOCIATION
Los Angeles, California
APRIL 28—MAY 1, 1957

HOTEL ROOM RATES*

	Single	Double	Twin Beds	Suites
AMBASSADOR HOTEL				
3400 Wilshire Boulevard				
Main Building	9.00-17.00		12.00-20.00	28.00-36.00
Garden Studios	15.00-21.00		22.00-26.00	38.00-48.00
CHAPMAN PARK HOTEL				
3405 Wilshire Boulevard			12.00	20.00-25.00
THE GAYLORD HOTEL				
3355 Wilshire Boulevard	7.00-9.00	10.50	11.50-12.50	18.00
HOTEL CHANCELLOR				
3191 West Seventh Street	6.00-8.00	9.00-10.00	10.00-12.00	17.00-22.00
SHERATON-TOWN HOUSE				
2961 Wilshire Boulevard	11.00-16.00		16.00-23.00	31.00

***The above quoted rates are existing rates but are subject to any change which may be made in the future.**

CALIFORNIA MEDICAL ASSOCIATION
450 Sutter Street—Room 2000
San Francisco 8, California

Please reserve the following accommodations for the 86th Annual Session of the California Medical Association, in Los Angeles April 28 - May 1, 1957.

Single Room $..... Double Bedded Room $..... Twin Bedded Room $.....

Small Suite $..... Large Suite $..... Other Type of Room $.....

First Choice Hotel..... Second Choice Hotel.....

ARRIVING AT HOTEL (date)..... Hour:..... A.M..... P.M. } Hotel reservations will be held until

Leaving (date) ..... Hour:..... A.M..... P.M. } 6:00 P.M., unless otherwise notified

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

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.....

Individual Requesting Reservations—Please print or type Delegate?..... Alternate?.....

Name..... County.....

Address..... City and State.....

CANCER COMMISSION
CALIFORNIA MEDICAL ASSOCIATION

Pre-Convention Conferences

LOS ANGELES • SATURDAY, APRIL 27

Radiology

Colonial Room, Ambassador Hotel

Chairman . . . . . Roy B. Weathered, M.D., Los Angeles
Secretary . . . . . Eugene G. Tainter, M.D., Sacramento

DIAGNOSTIC SESSION—9:30 a.m. to noon

Twelve diagnostic cases with histories and films will be presented. Cases have been selected to illustrate specific problems in the radiological and clinical diagnosis of cancer. Audience participation and discussion are urgently requested.

THERAPY SESSION—2:00 p.m. to 4:30 p.m.

Five cases with specific therapy problems will be presented. The audience is asked to participate actively.

Pathology

9:15 a.m. to noon • 2:00 p.m. to 4:30 p.m.

East Venetian Room, Ambassador Hotel

Moderator: HERBERT LUND, M.D., Greensboro, North Carolina

The Pre-Convention Conference on the Microscopic Pathology of Skin Cancer will be conducted under the chairmanship of Gerson R. Biskind, M.D., San Francisco.

Members who wish to attend this conference are requested to register now with Weldon K. Bullock, M.D., Registrar, Tumor Tissue Registry, C.M.A. Cancer Commission, Los Angeles County Hospital, 1200 North State Street, Los Angeles 33.

7:00 p.m.

Dinner meeting of the California Society of Pathologists. For reservations contact Ernest Simard, M.D., Secretary, 708 Cass Street, Monterey.

Cancer Commission Dinner

6:30 p.m.—Lido Room

Annual Dinner Meeting of the Cancer Commission and Advisory Committee.